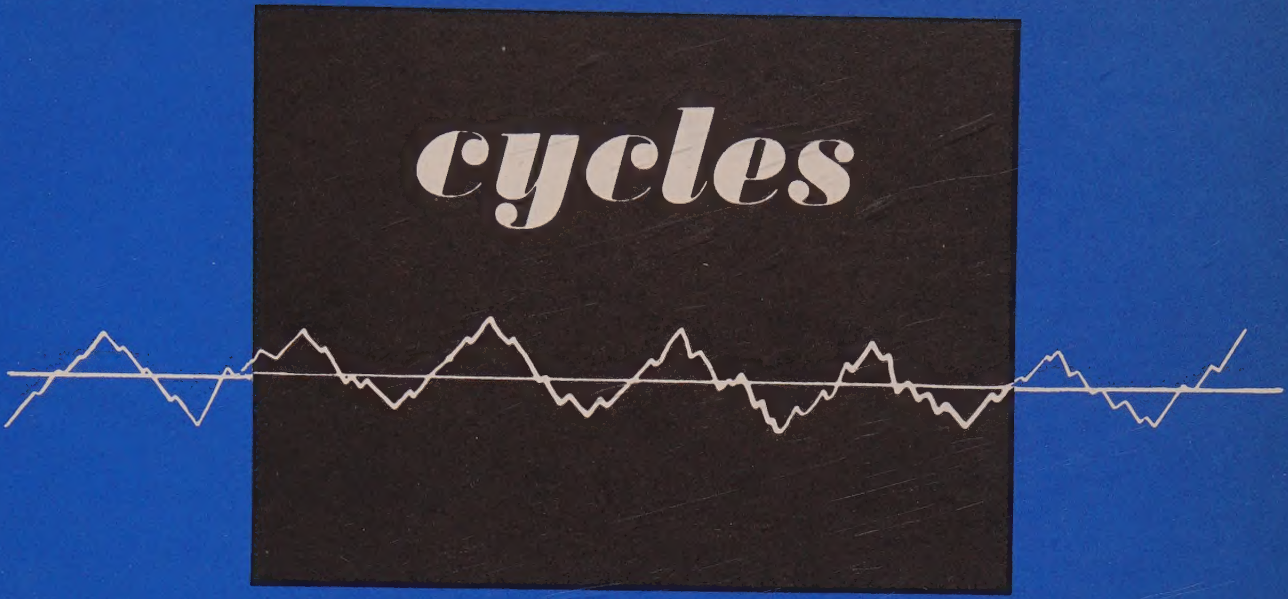
cycles



November 1958

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THE OFFICIAL BULLETIN OF THE FOUNDATION FOR THE STUDY OF CYCLES

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Program

Our program is (1) *to collect* as many examples as possible of rhythmic fluctuations in all fields of natural and social science, (2) *to measure* each of these rhythms with the greatest possible accuracy, (3) *to record* the latitude, longitude, wave length, wave shape, timing, and strength of each cycle in such a way that any qualified worker can reproduce the work and obtain the same results, and so that he can, if he wishes, take issue with the methods used by the worker to isolate, definitize, and evaluate the cycle, (4) *to stimulate* and help others to do these same things, (5) *to print* the results of all this research, (6) *to arrange*, collect, catalog, and group the cycles thus discovered and definitized, (7) *to discover the laws* which govern the operation of cycles, and (8) *to deduce* the *cause* or causes of cycles—all for the benefit of mankind.

Cycles IS PUBLISHED BY THE FOUNDATION FOR THE STUDY OF CYCLES MONTHLY AT THE FOUNDATION'S OFFICE AT EAST BRADY, PENNSYLVANIA. SUBSCRIPTION RATE $10.00 A YEAR. ENTERED AS SECOND CLASS MATTER AT THE POST OFFICE AT **East Brady, Pennsylvania,** WITH ADDITIONAL ENTRY AT DEXTER, MICHIGAN. PUBLICATION OFFICE, 680 WEST END AVENUE, NEW YORK 25, NEW YORK.

THE DIRECTOR'S LETTER

Dear Member:

War

It was in February 1951 that I first told you about the cycles in war. At that time I told you that just about now the cycles called for an important increase in the number and intensity of international battles. I see no reason to change this statement. You will find a detailed projection on page 308.

Speaking of war, it may interest you to know that in my spare time I am Civil Defense Director of our township. Day after tomorrow I am to give a Civil Defense talk before our local Rotary. The title: "War and Pieces!" It's a joke now, but it won't be *then*!!

Short Stock Market Cycles

Our report upon the 17.12-week cycle in stock prices seems to have aroused quite a little interest. A number of members have written in about it. Here, for instance is a paragraph from a letter from Kenneth A. Carney, one of our members from Kalamazoo, Michigan:

"The 17-week cycle recently reported on was the one I was trying to tell you about 4½ years ago. I had found it in many individual stock prices - but with highs and lows in some coming 4 weeks before those in others. Your 17 week cycle in the composite is timed exactly between these 4-week dates—and accounts for the small amplitude."

This letter confirms what I have been telling you. You *must* apply our findings to the individual stocks or other things in which you are interested. When you do, you will find, as Mr. Carney says, that the amplitude (strength) of the cycle is much greater. Moreover you will find a variation in the timing. Our work is trail blazing. You must carry on from there.

The Correspondence Course

You may ask, "How do I do that?"

The answer is contained in the 23 lessons I have prepared to teach you how to make a cycle analysis. These lessons record all I have learned about this subject during the 21 years I have been engaged in this work.

The lessons are *not* a money making scheme. I wrote them to broaden and extend the knowledge of cycle analysis—so there would be more people in the world who could do this sort of work. We don't want anyone to have the lessons who can't make use of them. Therefore, we have a money-back arrangement. After you have had every opportunity to examine the lessons, if they don't fill *your* needs, send them back! Your money will be refunded instantly.

The price is $50, but when you see them, I think you will agree they are worth it. If you haven't the time to study them yourself, turn them over to some bright young man in your organization. Let *him* do the work!

New Short Cycle Work

You may recall that in the October report I told you that the 17.12-week cycle in stocks seemed to be distorted from time to time by a shorter cycle, perhaps 16.39 weeks in lengths.

We have spent quite a lot of time during this past month trying to pin down this shorter cycle, but so far without success. We are going to give up on it for the time being. We will turn our attention to the alleged 13- and 33-week cycles. I hope we will have something to report in connection with one or the other of them in the next issue.

What's Ahead for Stocks?

I've told you time and again that I'm no stock market expert. I do *not* know what's ahead. But I *do* know that the combination of the 11 longer cycles that we have isolated is *downward* at the present time. (Longer cycles as used here means cycles 4 years long or longer.) Three of these longer cycles are going up, but eight of them are going down. The net is *down*.

These cycles have not always governed in the past. There surely will be times in the future when they will not govern either. I have pointed this out many times. On the other hand they *do* introduce a note of caution into the present situation.

The Dow-Jones Averages

I think you will enjoy the article about the 9¼-year cycle in the Dow-Jones averages.

This article starts on page 298. It was written by one of our members, John Harvey of Jackson, Michigan. I think he makes a very convincing case for this cycle in these figures.

I wish more of you would send in the results of your research.

What's Ahead for Business

What do we mean by "business?" Business can be measured in a variety of ways: Industrial production, manufacturing production, failures, department store sales, unemployment, etc. etc. From your own standpoint "business" probably has a much more restricted meaning: Automobile production, steel production, construction in Memphis, handkerchief production, or the production of sulfuric acid.

Each of these things has its own special behavior—its own special cycles. That is why each thing must be studied separately. Generalizations are not much good.

If we *must* generalize, I suppose *industrial production* is usually the best single measure to use. However, for cycle study, *manufacturing* production is better. This is because manufacturing production figures are available over a longer period of time.

I have studied manufacturing production from the standpoint of cycles. I have found a number of cycles in these figures. From time to time, as I have found them, I have told you about them. But I have never tried to combine them into a projection. Here are the reasons why I haven't:

The cycles 5 to 20 years long are not adequate to explain the really important setbacks in manufacturing production. To explain these, you must take into account the really long cycles - 35 to 50 years. But the figures don't extend backwards far enough to enable these long cycles to repeat many times. And, unless a cycle repeats, wave after wave, you can't be sure that it is not a mere oscillation - a mere up and down without any significance for the future. Therefore, not being *sure* about the important long cycles, I have been a bit wary about making and projecting a cycle composite.

The Geisinger Indicator

For my own knowledge of what's just around the corner I like the Geisinger Indicator. In the past when the Geisinger Indicator has touched plus two going up, good business has followed; when, going down, it has touched minus two, bad business has followed.

The *turns* of the Geisinger Indicator have often preceded the *turns* of business, too. The Geisinger Indicator turns tend to precede the business turns by about eight or nine months. The present upturn was foreshadowed by only 5 months. This shortening of the usual lag may have been due to the measures taken by the government to check the recession.

Let me remind you again that, for an extra $3.00, members can receive the Geisinger Indicator by first class mail just as soon as it is written. This special first class mail service gets the indicator into your hands about a month before it would reach you by way of the magazine.

Latitudinal Passage

This issue contains the first of a series of articles about Leonard Wing's work in respect to "Latitudinal Passage." As far as the subject has been studied, cycles seem to start at the two poles and pass over the face of the earth the way a ripple passes over a body of water. This behavior is called "Latitudinal Passage."

The "ripple" seems to travel over the face of the earth in proportion to the wave length of the cycle. Long cycles travel from pole to equator over a long period of time; short cycles over a short period of time. More exactly, the travel time, from either pole to the equator, seems to be close to 70% of the wave length of the cycle.

This may sound a little complicated, but if you will take the trouble to read the article that starts on page 288 I think things will clear up for you.

The importance of Wing's discoveries can hardly be overestimated. First, they tend to substantiate the concept that cycles have a physical basis. Second, they give us a hint as to the cause of cycles.

Later articles about Latitudinal Passage will show that, insofar as the matter has been studied the same behavior (a) holds true for cycles of all lengths (b) holds true for biological as well as physical science cycles and, (c) holds true for cycles on the sun as well as on the earth. It is something pretty fundamental.

Ever cordially yours,

Edward R. Dewe

Director

Research by Staff

THE 7-YEAR CYCLE IN R. R. STOCK PRICES

BY GERTRUDE SHIRK

You may remember that in our August 1958 report I told you of a 7-year cycle in combined stock prices, 1871—1957, a period of 87 years. This cycle had a typical strength of 6.9% at ideal time of crest. The current ideal crest of the 7-year cycle in the combined index was set at 1957.9.

The Rails

Rail stock prices are available from 1831—a period of 127 years. It will be useful to study this cycle in the longer rail figures to see (a) if, over the same period, rails have the same cycle, (b) if the cycle persists as we go backwards from 1871 to 1831, (c) if, with a longer string of figures, the length remains the same or changes slightly, (d) if the strength is the same, and (e) if the timing is the same. The answers to these questions follow:

The Answers

(a) The rails do indeed have a 7-year cycle.

(b) The 7-year cycle in the rails does persist as we go backward from 1871 to 1831, a period of 40 additional years. This fact tends to confirm the significance of the cycle.

(c) With these 40 additional years of figures the length proves to be slightly longer than it appeared to be in the combined index. Over the whole span of 127 years the length proves to be 7.1 years. Whether this slight difference means that the length is changing, or that with the longer series of figures we are able to determine the length more accurately, I do not know, but I suspect the latter.

(d) In the rails the strength is 4.2% above trend at ideal time of crest, slightly weaker than is the combined index.

(e) The time of current ideal crest in the rails comes at 1958.45, a little later than the time given for the combined. This change in timing does not mean that the rails actually turn later. It merely means that the length of 7.1-years forces the timing to be 1/10 of a year later for each cycle, than it would be for 7.0 years. If the length in the combined index were changed to 7.1, its ideal crest would come 1958.52.

The Same Cycle

I think we are safe in assuming that the 7-year cycle in the combined index and the 7.1-year cycle in the rails are one and the same cycle. That is, I think that if we had 127 years of combined index figures instead of 87 years, the length of the 7-year cycle in the combined index would turn out to be 7.1 also, and the timing would doubtless be about the same as for the rails.

If this be true, you should use a length of 7.1 years in looking for this cycle in the individual stocks in which you are interested, whether rails, industrials, or utilities.

Cycle Stronger in Certain Stocks

This cycle is doubtless *much* stronger in certain stocks than in others. Whether it is strong enough in any of them to provide a basis for trading I do not know, but I would imagine not. However, in some stocks it should be important enough to help you to call the turns, especially when you use it in conjunction with other cycles.

Technical

A full explanation of all the techniques used in the isolation of this cycle will be found in an article to appear in a forthcoming issue of the *Journal of Cycle Research*. However, for those whose interest is merely superficial, the following account should suffice.

Refer to Figure 1 on the two pages next following.

Curve A charts the Cleveland Trust Company Index of Rail Stock Prices (1935-39=100), from 1831 through 1872, adjusted to make it comparable with the Standard & Poor's Corporation Index of Rail Stock Prices (1935-39=100). The latter index is used from 1873 through 1957.

You will recall that previous work on this series of figures disclosed three rhythmic cycles, as follows:

(1) A 9.18-year cycle. (See *Cycles*, June 1956, pp. 157-166.)

(2) An 8.39-year cycle. (See *Cycles*, November 1958, pp. 287-294.)

(3) A 7.94-year cycle. (See same reference.)

(4) A 5.91-year cycle. (See *Cycles*, April 1957, pp. 93-98.)

Curve B shows Curve A ex these four cycles.

Curve C shows a 7-year centered moving average trend of Curve B.

Curve D shows the percentages by which Curve B is above or below Curve C. Curve D is smoothed.

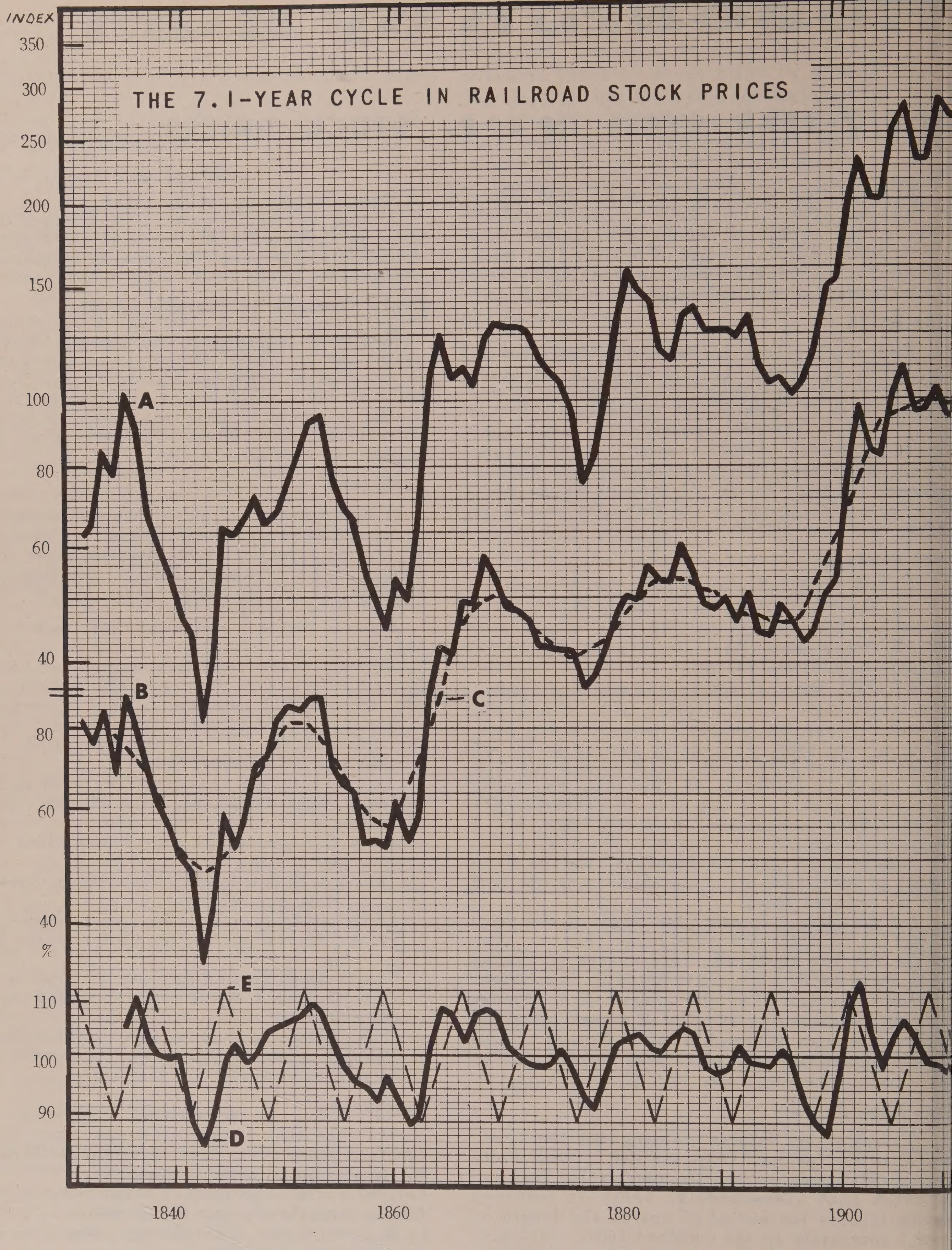
Curve E is a regular 7.1-year cycle.

Conclusion

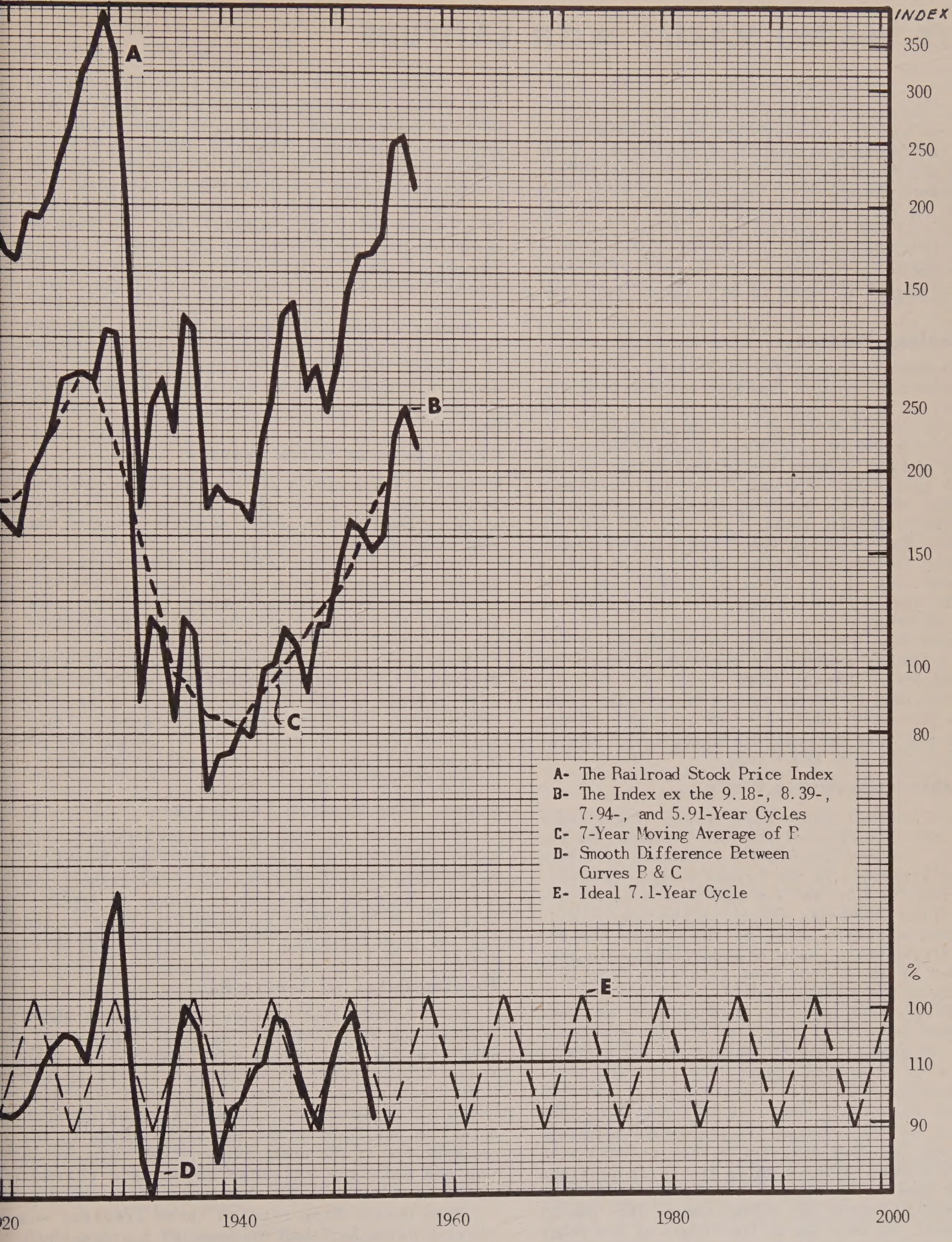
The fact that the 7-year cycle found in the combined stock price figures continued backward for 40 additional years is reassuring.

This cycle will exert a slight downward influence upon the averages for 3½ years.

In some stocks the influence should be much stronger than in others.



THE 7.1-YEAR CYCLE IN RAILROAD STOCK PRICES


INDEX
350
300
250
200
150
250
200
150
100
80
%
100
110
90
A
B
C
D
E
A- The Railroad Stock Price Index
B- The Index ex the 9.18-, 8.39-, 7.94-, and 5.91-Year Cycles
C- 7-Year Moving Average of B
D- Smooth Difference Between Curves B & C
E- Ideal 7.1-Year Cycle
20
1940
1960
1980
2000

CYCLE TIMING VARIES WITH LATITUDE*

By Edward R. Dewey

The calendar timing of the crests of all cycles — insofar as they have been studied relative to latitude — come later and later as the cycles are found farther and farther from either pole toward the equator. This behavior holds true regardless of the wave length of the cycle; regardless of the phenomena in which the cycle is found. It holds true for biological cycles as well as for non-biological ones. It is called "latitudinal passage." It seems to be a law of cycle behavior.

Latitudinal Passage

Latitudinal passage was discovered in 1953 by Dr. Leonard W. Wing, a Research Associate of the Foundation. He has spent almost full time for the past five years amplfiying his original discoveries.

The existence of latitudinal passage is one of perhaps a dozen reasons for believing that cycles are not accidental or dynamic, but are the result of forces which are external to the phenomena in which the cycles are found.

Doctor Wing chose the term "latitudinal passage" to imply that a postulated cyclic force passes over the face of the earth in more or less the same way that a ripple passes over the surface of a body of water.

Doctor Wing's discoveries are potentially one of the greatest advances in cycle study since the study of cycles 250 years ago.

The account of Doctor Wing's discoveries reads like a detective story. I think it will interest you to hear how he made his discoveries and to learn a little more about them.

The Behind-the-Scenes Story

It all started with a study of the flight years or periodic invasions of the Pine Grosbeak. As you may know, the Pine Grosbeak is a Northern bird seen only at intervals in the United States. However, every four years or so, for some reason as yet unknown, Pine Grosbeaks appear in the Lake States and other northern areas of the United States. These flight years, as they are called, have been recorded at about four year intervals from 1870 right up to the present time.

Although these invasions tend to recur at about four-year intervals, from time to time something breaks the sequence and the pattern of flight years gets out of step with itself. For example, after invasions in 1870, 1874 (4 years later), and 1878 (4 years after that) there was an invasion in 1880 after an interval of only two years. The cycle had reversed. The four year cycle then resumed with 1880 as a base. After a while the cycle reversed another time.

Reversing cycles are quite common. They can be accidental, or they can be the result of two other cycles, one slightly longer and one slightly shorter than the observed behavior, or they can be the result of something else. In studying the invasion patterns, Doctor Wing calculated that the behavior observed could have been the result of two cycles: 3.694 years (44.3 months) long, the other 4.221 years (50.7 months) long. There is no assurance that the behavior *is* the result of cyclic forces of these lengths, but it *could* be. The result observed is what we would get *if there were* forces of these lengths operating simultaneously.

What could be the cause of this peculiar behavior? Is it something within the Pine Grosbeaks that makes them behave this way; or do they come south in response to some environmental influence? If the influence is environmental, what could it be?

Cycles Help to Solve Mystery

Here is where cycles can help us. If we can find an environmental factor that fluctuates in a cycle which is identical in length with the cycle of the Pine Grosbeak we may have a clue.

Engineers use this method to trace vibrations through the body of an airplane. They get the wave length of a particular vibration. Then they trace its cause by finding what else within the airplane has vibrations of the same wave length.

There are many environmental factors that could be tested to see if they fluctuate with the same wave lengths as the Pine Grosbeak. For example temperature, humidity, barometric pressure, rainfall, variations in ozone content, variations in terrestrial magnetism, per cent of sunshine, electric potential, etc.

Doctor Wing Studies Temperature

In trying to run down environmental factors that might have the same cycle as the Pine Grosbeak, Doctor Wing decided to investigate temperature. As the Pine Grosbeak is a northern—almost an Arctic—bird, Doctor Wing began to study the cycles in the thawing (and freezing) dates of various northern rivers.

Thawing Dates of Arctic Rivers

It is pretty obvious that a warm winter and a warm spring will result in an early thaw; a cold winter and a cold spring will result in a late thaw. As the dates when the ice in the rivers break up have been carefully recorded over many years it is possible, through a study of such dates, to get light on the probable changes in the temperatures of the areas involved. By this method you can make the calendar serve as a thermometer.

When Doctor Wing studied these freezing and thawing dates he found evidence of a cycle about

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*A postscript to chapter 10 of *Cycles—The Science of Prediction*, by E. R. Dewey and E. F. Dakin.

4 1/4 years in length. You will remember that this is one of the two cycles seemingly present in the behavior of the Pine Grosbeak.

Doctor Wing does not like the word "about." Like any good scientist he wants to know *exactly*. Of course, you can never know *anything* exactly, but you can know as exactly as you can! To get cycle lengths with more precision you need to use long series of figures. Data on the freezing and thawing of northern rivers were available to Doctor Wing for only 40- or 50-year periods (see his article, "Cyclic Trends in Arctic Seasons" in the Autumn 1951 *Journal of Cycle Research*), so Doctor Wing turned to measurements of glacial varves, one series of which in the North Country was available over some 570 consecutive years.

Thickness and Thinness of Glacial Varves

Varves are thin layers of mud laid down year by year. The nature of the material deposited in the winter differs from the material deposited in the summer, so that the varve laid down one year can be distinguished from the varve laid down in the year following.

Some varves are thick, others are thin. These differences have been studied under microscopes and have been measured with great accuracy.

Varves are usually found in old lake bottoms, many of them in lakes fed by melting glaciers. It stands to reason that in a warm year, when the glaciers melted more, the amount of deposit washed down by the glacier water could be more—and the varve thicker—than in the cool years when the glacier melted less. If this is so, the thickness of the varve should be a rough measure of temperature. Any regularity discovered in the alternate thickness and thinness in the varves would therefore presumptively be a measure of weather cycles.

The situation is not quite as simple as I have made it appear. Rainfall is an important element in varve thickness, too. Lots of water rushing down may carry more or larger particles and may thus make varves thicker. Nevertheless, I think it would be generally agreed that temperature is a factor in the thickness and thinness of glacial varves.

The varves studied by Doctor Wing were laid down something over 10,000 years ago.

A cycle study of these varves did in truth show a cycle about 4 1/4 years long in the 570 years of data available. During this time the cycle had a chance to repeat 135 times. This number of repetitions was enough to enable Doctor Wing to determine that the length of this cycle in the glacial varves was 4.222 (± .004) years in length. You will remember that this is the length originally estimated for our old friend the Pine Grosbeak with which all of this work started. This measurements of 4.222 is more exact than the length of about 4 1/4 as found in the break-up of northern rivers. It brought a corresponding degree of joy to Doctor Wing's scientific heart.

Thickness and Thinness of Tree Rings

"Now," said Doctor Wing, "if only I had another series of figures longer yet, I could get the length still more accurately." And, of course, he was right. The 570 year record was the longest consecutive series of glacial varve widths we could furnish him. So, perforce, he turned to tree ring widths which also may be a measure of temperature.

Tree rings have the added advantage that, if you know the year when the tree was cut down, you can compute the actual calendar date of each ring. This fact enables you to know the *timing* of the cycle as well as its length.

As I am sure you know, trees grow by adding a layer of wood to their circumference each calendar year. The part of the layer that is added during the winter is dense and firm. The part added during the summer is softer. These two parts of the annual ring, the hard and the soft, constitute the layer for the given calendar year. Some of these layers are wide, and some are narrow. There is a tendency for wide layers to come at uniform time intervals—cycles.

Tree ring widths are often available over a long period of time. Some of the sequois tree-ring widths go back two or three thousand years, but Doctor Wing used some Arizona tree ring records which we published in our report for May 1951. Taking the last 1,043 years of these records he again discovered a cycle of about 4 1/4 years long which, in this case, also measured out to 4.222 (± .002) years in length.

When I said that Doctor Wing discovered a cycle of this length in these tree ring figures and these varve figures I do not mean to imply that every 4 1/4 years like clockwork the varve widths on tree ring widths were thicker. Not at all. I do not even mean to imply that there were four thick rings every 17 years. There are many other cycles present in both the varves and the tree rings as well as various random factors. The result is that you can see the 4.222-year cycle in these figures only by averaging a great number of consecutive cycles so that the other cycles and accidental factors are "washed out." Therefore, instead of saying that a cycle of this length is present in these figures it would be better to say that a cycle of this length is present *on the average* in each of these series, and, in fact, in each half of each of these series.

Length 4.222 Years

By now, Doctor Wing was pretty well satisfied that the length of this particular cycle was 4.222 years. He was therefore ready to investigate the actual weather records which for the most part are not available for more than 50 or 100 years. Knowing the exact length of the cycle makes an investigation easy.

Canadian Temperature Records

First of all, because the Pine Grosbeak is a Northern bird, he studied the weather records of Dawson in the Yukon and Edmonton in Alberta. The 4.222-year cycle in the temperature records in these places was not at first visible. It was obscured by cycles of other lengths. After the cycles of these other lengths had been isolated and removed, however, the 4.222-year cycle remained clearly present in each half of the figures for each place.

Doctor Wing then went on to find the same cycle in some other temperature records, those of Chicago, for example, and one or two other places in North America. He found at least a trace of this cycle in every place he investigated.

Also Present in Old World and in the Southern Hemisphere

"I wonder," said Doctor Wing, "if this cycle is also present in the Old World and in the Southern Hemisphere?" With this thought in mind he investigated records of Argentina and Europe. Sure enough, the cycle was there also!

The Behavior in 100 Places

"Let us now do this thing wholesale," said Doctor Wing, "Let us get records all around the World: Europe, Asia, Africa, and Australia, as well as North and South America. Let us investigate this cycle in a hundred different places and see if it is universal." No sooner said than attempted; but it was a long time after it was attempted before it was done!

When the work was completed, Doctor Wing had evidence of a 4.222-year cycle in all these different places. But the evidence for some places

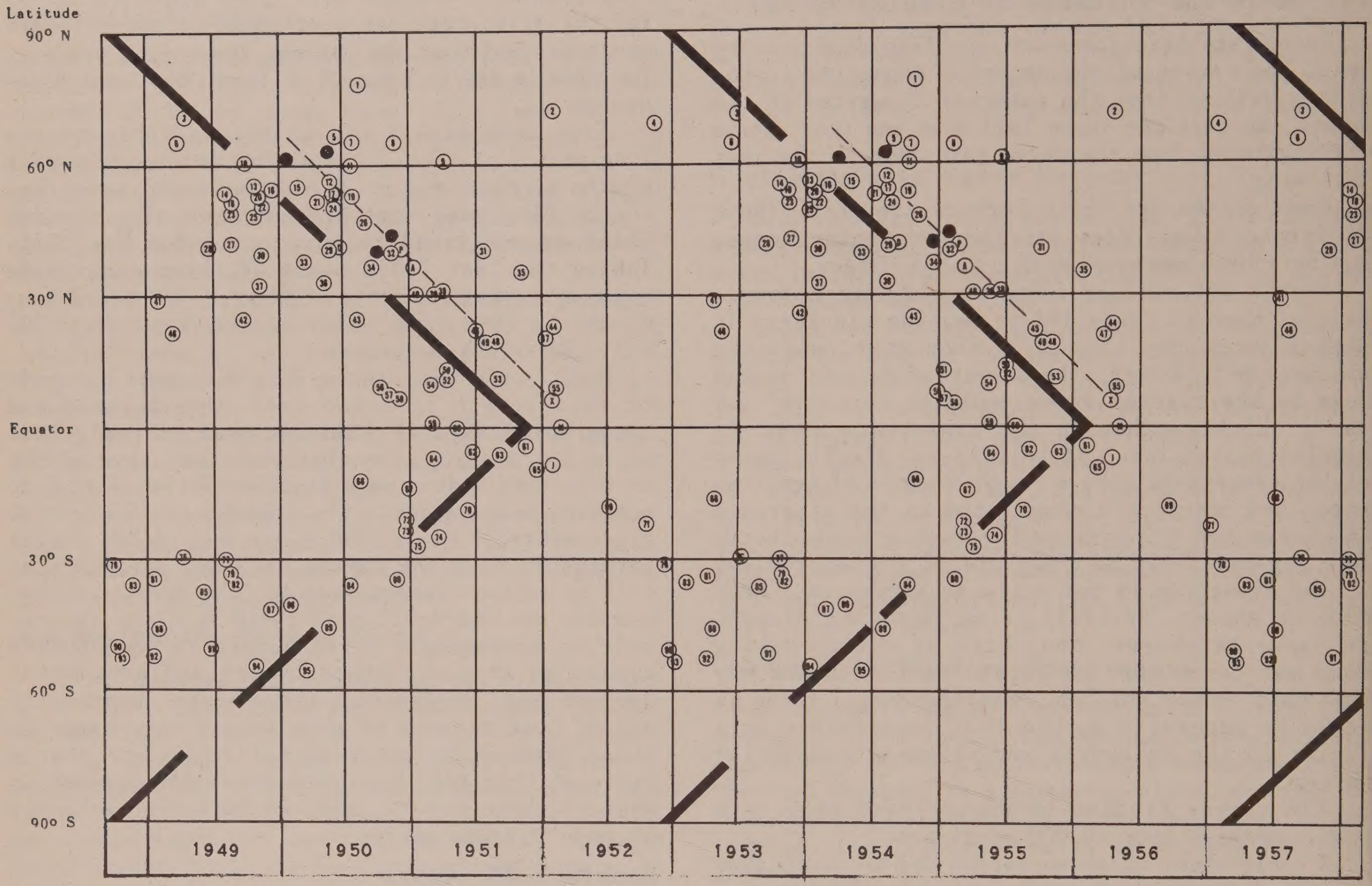

FIG. 1.
THE 4.222-YEAR CYCLE IN TEMPERATURE AND IN OTHER PHENOMENA PLOTTED BY LATITUDE

The horizontal scale represents years. The vertical scale represents latitude. The numbered circles mark lows of the typical 4.222-year cycle in temperature for 97 weather stations throughout the world. Lettered circles are turning points of other phenomena. (Open letter circles represent lows. Solid letter circles represent highs.)

Note that in both hemispheres the temperature lows come later and later as the phenomena are found nearer and nearer the equator. This behavior creates a mirror image or butterfly pattern as indicated by the heavy diagonal lines. (Sunspots behave the same way.) The dashed line indicates the typical tree ring turning points (circles labeled A, J, N, P, V, and Y).

It seems unlikely that a latitudinal shift as definite as this could come about by chance.

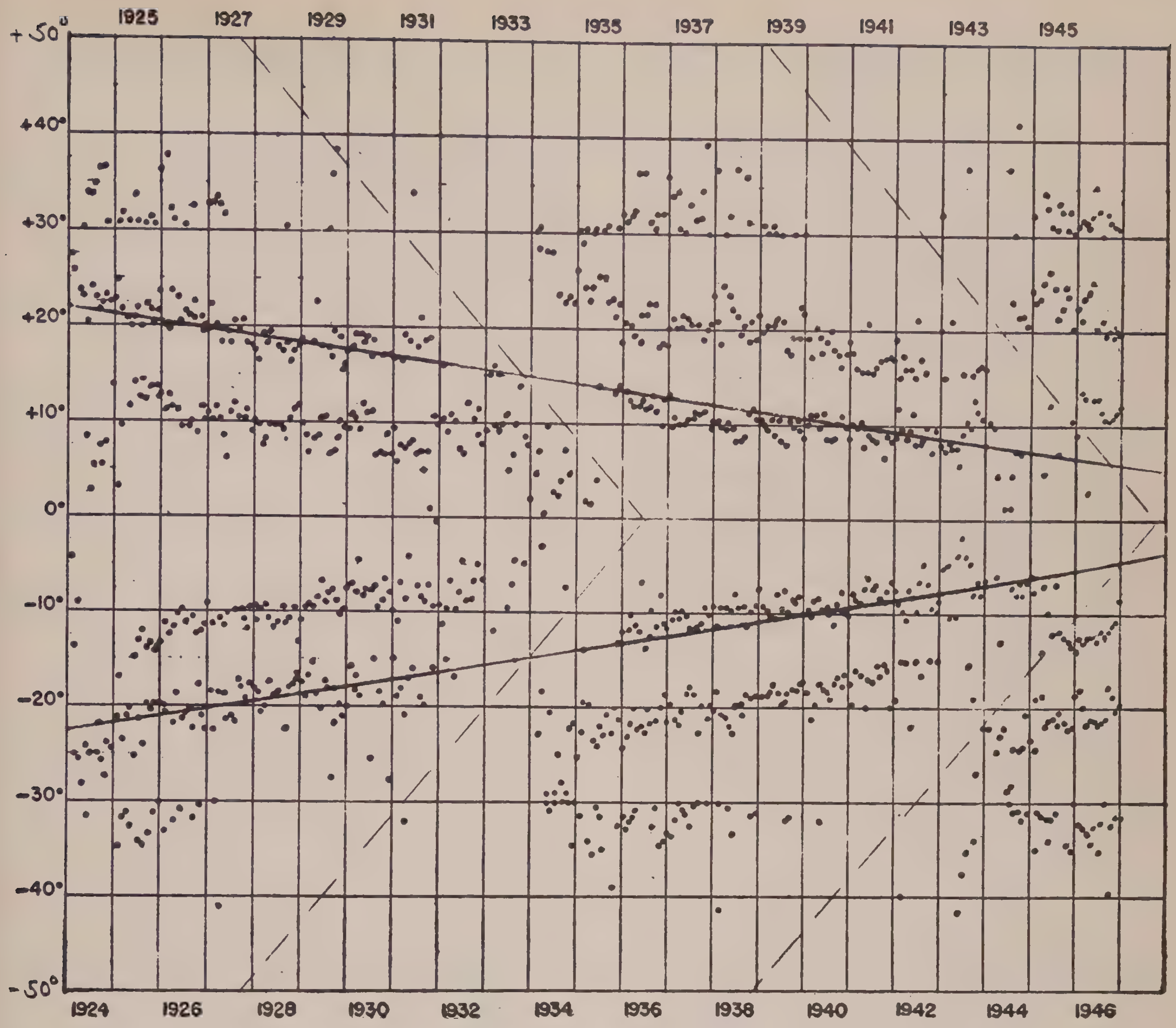

FIG. 2.
LOCATION OF SUNSPOTS BY LATITUDE
JANUARY 1924→DECEMBER 1946.

This chart shows the characteristics "butterfly" or latitudinal passage behavior so well known to students of sunspots.

To the basic chart above, reproduced from *Sunspots in Action* by Dr. Harlan True Stetson (The Ronald Press Company, 1947) I have added broken diagonal lines to show that the zones where there are few or no spots slip across the face of the sun about 1¾ years every 10°. Starting at the equator these diagonal lines would reach the poles in about 15½ years, which is about 70% of the double sunspot cycle of 22.3 years.

Note also that some of the spots seem to fall in bands which, if extended, would reach the poles in about 120 years. This time interval is about 70% of 168 years, a basic sunspot pattern length.

Other patterns can be traced.

was much clearer than the evidence for other places. This is so because, doing the job wholesale, it proved impossible to do the detailed work necessary to carve away the conflicting cycles one by one, as he had done with his preliminary work, so that the 4.222-year cycle might remain as a residue. When the series of figures was short, as it often had to be to get geographical distribution, it was impossible to know the length of the 4 1/4 year cycle with any accuracy, and it had to be assumed that any cycle of this general order of magnitude was 4.222 years as it had proved to be in the longer series of figures. However, whether or not there really are 4.222-year cycles present at all of these places has nothing to do with the important part of the story to come in a moment.

Peaks Scattered

When he had before him the results of his labors in respect to the hundred different localities (it finally turned out to be 97) Doctor Wing found himself wondering whether or not the highs of the various cycles came at the same time. They did not. They were scattered over the calendar like the stars of the heaven.

Doctor Wing then wondered whether, as with sunrise, longitude might have something to do with the timing of these various highs,—if the high of this cycle in New York came at the same time as the high in Bogota, Columbia, which is directly south of it; if the high of this cycle in Berlin came at the same time as the high in Rome or in Capetown, South Africa, all three of which places fall on the same north and south line. This investigation likewise led him nowhere.

Pattern Emerges When Peaks Arranged by Latitude

Then Doctor Wing, by a stroke of genius, found himself wondering if *latitude* might have something to do with it. That is, if all the northern places might have one timing, the middle latitudes another timing, and the equatorial latitudes still another. Here at last pattern emerged as you can see by reference to Fig. 1. The highs *did* come progressively later and later as you go from the polar latitudes toward the equator, not only in the Northern Hemisphere but in the Southern Hemisphere also! The slippage amounted to about 4 months for every 10° of latitude. This fact suggests that if the behavior starts at the poles it takes about three quarters of a cycle length for the highs to traverse the whole hemisphere. (More exact measurements suggest that the slippage from pole to equator is very close to .707 of the length of the cycle.)

Figure 1

At this point it might be a good plan to digress a moment to make sure you understand Fig. 1. First of all, read the caption under it. Now let me illustrate the meaning of this caption.

Take for example the two circles which encloses the numeral "1." These circles represent (a) the latitude and (b) the ideal timing of the lows of the 4.222-year cycle in temperature at Spitzbergen. The *latitude* of Spitzbergen is 78° 2' North. Hence the *vertical* position of the circles is about half way between the 60° N line and the 90° N line (North pole). The ideal timing of the 4.222-year cycle of temperature at Spitzbergen puts lows at 1950.575 and at 1954.797. Hence the *horizontal* position of these circles is a little to the right of the line that makes the middle of 1950; nearly to the line that makes the end of 1954. The chart could be extended any distance to the right or left. If it were, there would be a number 1 circle at latitude 78° 2' N every 4.222 years forward and backward indefinitely.

You will see a number 2 circle at latitude 72° 47' N. It is shown early in 1952 and a little later in 1956 (1952.096 and 1956.318, to be exact). These circles represent the ideal timing of the low of 4.222-year cycle in temperature at Upernivik, Greenland.

And so on for each of the other 97 weather stations studied in this preliminary work of Doctor Wing.

The tendency of this cycle to trough later and later as it is found nearer and nearer the equator is clearly evident.

The fact that *any* latitudinal pattern was present is most important. Things don't fall into a pattern just by chance. The fact that this *particular* pattern appeared is even more important, for this wing-shaped "butterfly" pattern is the one into which sunspots fall, as shown by Fig. 2. When Doctor Wing saw that his 4.222-year temperature cycles fell into this well discovered solar pattern he realized that he had discovered something of basic importance indeed, and one that someday might well solve the mystery of cycles.

Further research was to take five avenues. First, does the 4.222-year cycle in the remaining temperature records of the world behave the same way? Second, do other things that have this 4.222-year cycle behave the same way? Third, do other wave lengths behave the same way? Fourth, are the irregularities and departures from perfect timing explainable? And fifth, do these behaviors throw any light on solar-terrestrial relationships?

Limitations of space prevent me from discussing, here and now, any except the first of these five avenues. There is however, room to say that Doctor Wing set about to investigate the timing of any possible 4.222-year cycle in *every* weather station in the whole world for which more than 40 years of figures were available. A total of 262 weather stations were studied. The results confirmed the original findings. Latitudinal passage of the 4.222-year cycle of temperature can be accepted as a fact.

The fact that Doctor Wing found latitudinal passage to be present as a characteristic of other cycle lengths, found it to be present in other phenomena, and has found important corollary facts about it, will have to await another article.

Research by Others

GRAY EPICYCLE THEORY

BY H. B. VAN HOUTEN

The plant in the forest sprouts, grows to maturity, puts forth its bright blossoms, and then withers and dies. So it has been with civilizations. Each has had its formative developed, florescent, and degenerate phases.

A conceptual working model of the evolution of an ancient civilization is proposed by Charles Edward Gray in *American Anthropology* for February, 1958, in a paper called *The Epicyclical Evolution of Graeco-Roman Civilization*. It is based upon the assumption that underlying the rise and decline of that civilization was a definite "epicyclical" pattern.

According to Gray, Graeco-Roman civilization was an historical entity, a single cycle of economic rise-and-decline from 950 B. C. to 330 A. D. which can be represented on a graph. The entity can be divided into two social *epochs*, that of the city-states, which came to an end in 350 B. C. with the rise of Macedonia, and that of the super-states; and their two cycles can be superimposed on the over-all cycle. Each of the epochs can be divided into two political *eras*, the former into the Archaic, ending with Marathon in 490 B. C., and the Athenian; and the latter into the Hellenistic, ending with the Gracchi in 135 B. C., and the Roman. The cycles of the four eras in turn can be superimposed on the cycles of the epochs, thus giving the formative-developed-florescent-degenerate phases of classical history.

Each of the epochs can be subdivided into four *periods* divided by the zeniths and the nadirs of the four eras, and each of the eras can be subdivided into its own formative-developed-florescent-degenerate *stages* by using dates of transition that conform to historical actuality. Translating those periods and stages to the graph gives Figure 1, a working model of cycles within cycles wherein the rise-and-decline of each cycle is geared to the rise-and-decline of another. That is the basis of the epicyclical theory proposed by Gray.

To put the working model in motion, we turn from the consideration of economic, social, and political developments to cultural development. The latter, we find, were rooted in the interactions of the former. When economic or social or political developments reached their zeniths, there was cultural development. Conversely, when the curves of economic-social-political developments slid into in depressions, creativity was inhibited and diminished.

Therefore, if the epicyclical theory is valid, we should find the thinkers and the artistic creators clustered in developed and florescent stages, More so in developed and florescent periods, and still more so in developed and florescent eras; and when the developed or the florescent phase of one cycle happened to coincide with the developed or the florescent phase of another we should look for a burst of creativity in arts and sciences.

The incidence of creativity can be measured by taking the names of the creators at their prime in each economic-social-political phase; giving four points to each of the very great, three to the great, two to the near great, and one point to the notable; adding the points for each phase; and translating the scores to a graph, Figure 2.

Watching the working model in motion—that is, comparing Figure 1 and Figure 2—we observe what Gray terms a remarkable regularity. The graph of Figure 2 does rise in the developed-florescent stages, and it does fall in the formative and the degenerate stages; and there is a distinct upthrust in each of the cyclical coincidences. Only the epicyclical theory can account for the structure of Figure 2. No other can go so far toward explaining the simultaneity of genius and the irregularity of its appearance.

In conclusion the author writes: "The epicyclical theory traces a grim design, but does not ascribe causality to the design, for it is a descriptive but not an analytical theory. It can only refer us back to all the known and varying economic, social, and political trends of antiquity, and provide a framework of reference for ferreting out in a real manner how the confluence and interaction of those trends resulted in the epicyclical evolution of the mightiest civilization prior to our own."

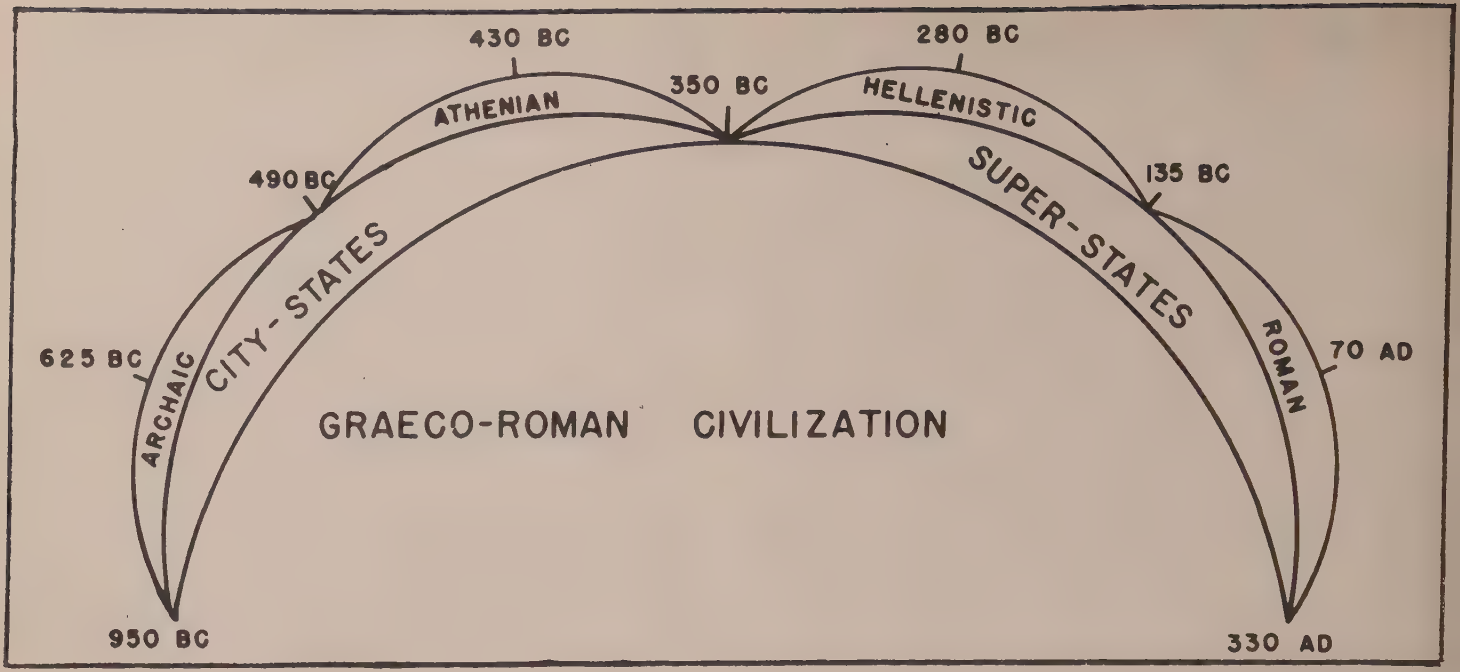

Fig. 1 Gray Epicycle Theory

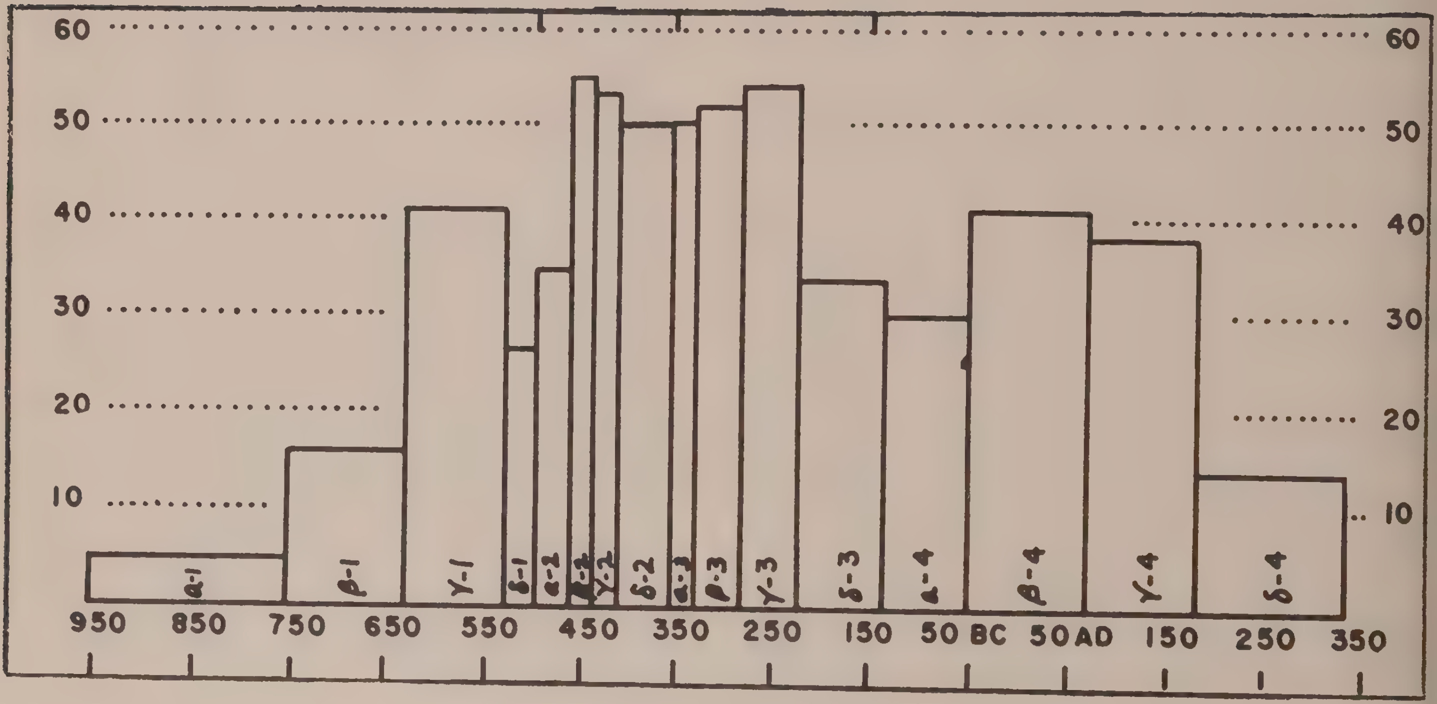

Fig. 2 Gray Epicycle Theory

GRAY'S EPICYCLICAL EVOLUTION

COMMENT BY A. L. KROEBER*

My function in this comment on or complement to Gray's paper is to point out certain relations of Gray's thought to that of others and to the basic problems involved.

"Epicyclical" here has nothing to do with mathematics. There is nothing more mathematical in Gray's paper than counting . . .

Gray's epicycles I think would technically be "epicycloids," that is, cycloid or near-cycloid curves superimposed on a circle or part of its perimeter instead of on a straight line. The epicycloid starts in contact with the basic circle or segment, rises above it, descends, touches, and then repeats over. The whole is like small gentle waves of water, of short length and height, carried on the surface of a ground swell . . .

These are the sort of cycles and epicycles that Gray finds in the progress of Graeco-Roman civilization.

Gray's Model

What Gray has done is to summarize the course of Graeco-Roman civilization by a conceptual model which can be visually diagrammed . . .

The only questions that should be asked are: Do the graphs express the phenomena consistently and do they help insight by the way they organize the facts?

The first question I would answer by an unqualified: Yes, obviously. On the second question, I want to try to make the significance of his results more explicit.

Many historians prefer to keep the histories of the Greeks and the Romans tidily separate, and they have brought us up to assume that Greece and Rome are and ought to be separate universes of discourse and inquiry. But if Greek and Roman cultures are somewhat more similar to each other than either is to any other civilization, it is of course legitimate to treat them also as a unit of a one-step-higher order, especially in long-range or widely comparative situations. We all do that, for certain purposes, as in speaking of Classical Antiquity, or for that matter of Ancient History as contrasted with Medieval and Modern . . . In my inductive examination in *Configurations of Culture Growth* (1944), I began conservatively by keeping Greek and Roman phenomena apart, but then found them meshing so neatly as obviously to constitute a single growth process (pp. 119, 688, 690). Gray chose the hyphenated name Graeco-Roman which admits the double constitution, but he is surely within his rights in choosing to treat the culture as a unit; and the smoothness of his results validates his choice.

Obviously it is not a matter of one of these delimitations being "truer" than the others, but of which one is most appropriate and useful as a frame to a given problem. Most narrative historians have more to say than they have space for, and prefer to limit themselves to Greece without Rome, or reverse, or even to fifth-century Athens, or the Peloponnesian War. Most comparers of civilizations feel that a larger unit enables them to compare more fruitfully.

Basic Idea

Gray's interpretation throughout is based on the idea of rise and fall—a sort of trajectory curve. He uses a formula of Formative, Developed, Florescent, Degenerate stages. . .One might quarrel with the names of his four recurrent stages of formative, developed, florescent, degenerate; personally, I do not like them too well: yet the cardinal question is not the aptness of his designations but whether his organization of the history dealt with is sound in not violating the phenomena, and whether it is meaningful. And there I am mainly in accord.

The whole concept of growth of cultures, of their traversing a course, of evolving and degenerating, as Gray calls it, has often been attacked as being a false organic analogy. It is false if one imputed, explicitly or implicitly, organic processes as being directly operative in the history of civilizations . . .

It is neither false nor an analogy when we speak of cultures growing, or segments of them growing. The term is a metaphor . . .

Not only plants and animals grow, though it is in this biotic area that the term first developed . . . Crystals are said to grow. Fortunes and reputations grow and fade or vanish. Populations, societies, states, institutions . . .all grow.

It seems high time to ban the stereotype of the "false biologic analogy." Some of its use is derivative chatter. The rest comes mostly as incidental sideswipes by people who are not interested in tracing and understanding the courses of civilizations . . .

Gray starts with a convex base. He sees the course of Graeco-Roman history as a rise and fall; this determines the profile of his subsequent economic, social, and political epicycles.

For certain purposes it is convenient to assume a straight level base instead of a convex one. This is what Gray has done in his Figure 2 where he is concentrating on creative "culture."

Here the base represents the flow of time—equal distances for equal periods. The elevations represent the total measurable cultural achievement in each period or subperiod as he has previously

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determined these from the subcreative data . . .

The point of Figure 2 is to test the reality of his first set of epicycles, the basal formative, developed, florescent, and degenerate. If these are actual epicycles they should show a drop or recession at their junctures. . . Chronologically, these critical junctures fall at about 490, 350, 135, and (as a terminus) A.D. 330. As each of the basal epicycles contains four superposed epicycles, there should be some drop in every fourth one of these topmost epicycles, irrespective of whether the general course at that moment is ascending or declining.

Gray's postulated drop at the junctures of his main subperiods does appear, and he construes this as validating his epicyclic model. Not having thought consciously in terms of epicycles, I should not have expected visible recessions in cultural creativity at 490, 350, and 135 B.C. Something evidently did happen around those years. While one might think up other explanations, the computations do fit and thus tend to confirm Gray's model.

It is correct that in *Configurations of Cultural Growth*, I did not formulate any consistent pattern running through the course of each of the arts and sciences examined there. I leaned back to be inductive, and therefore kept separate everything that might be separated. Yet in a diagram on page 690, in a chapter entitled "The Growth of Nations" but which would better have been called "Whole Cultures," I collocated eleven creative activities of the "Hellenic-Roman" culture development from about 550 B.C. to A.D. 350—almost exactly the duration treated by Gray. But while I collocated, I did not then summate. I do that now, in order to compare with Gray's Figure 2.

I have ruled on my 1944 collocation diagram vertical lines for each century and half-century, and then counted how many Greek (solid line) and Roman (broken line) creative pursuits were successfully active in each 50-year moment. If an activity was marginally productive (dotted line in the original), I counted that as half a point; and for each culmination of an activity (asterisk) I added another half point. The result is Figure 1 herewith. Considering that I might have rated culminations somewhat lightly, I have added broken line extensions which show the profile with culminations counted at a full instead of a half unit.

Gray's Figure 2 and my figure may not be compared for detail off-hand and outright. While they both show the course of Graeco-Roman creative culture, they use somewhat different immediate materials and process them differently. My 50-year

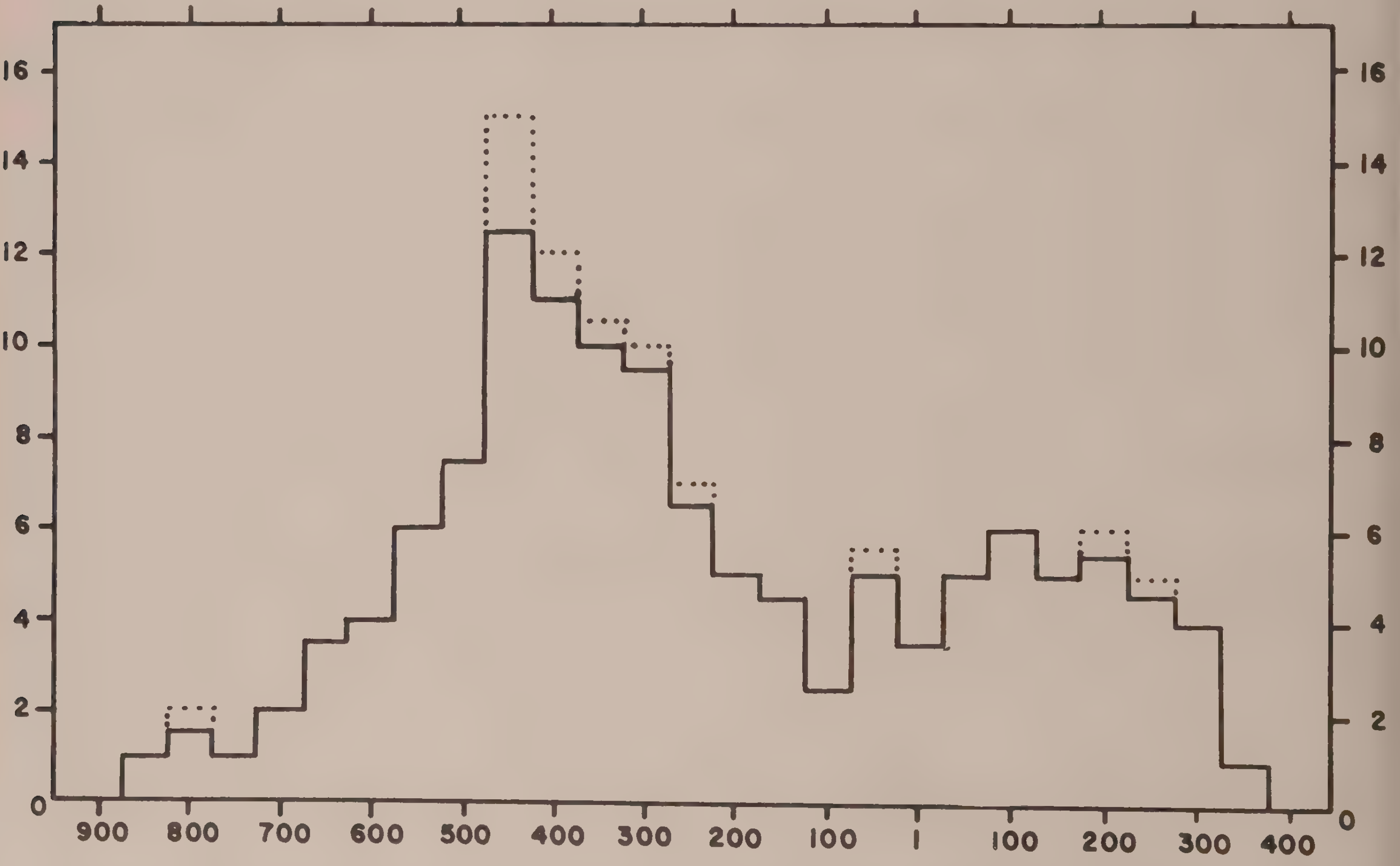

FIGURE 1. Cumulative profile of items in figure on p. 690 of *Configurations of Culture Growth*.

moments are more than an average life-work span, but less than a full life time, and are all alike. Gray's vary from 25 to 200 years. His are a summation of all available creative names, weighted; mine, a summation of my judgments as to when certain activities were and were not genuinely creative. The scales of time and achievement are also arbitrarily different.

Nevertheless, certain intrinsic agreements and disagreements appear . . .

Comparison: Gray and Kroeber

In short, of Gray's three junctural drops-and-rises, my profile shows both drop and rise in one case, only the rise in a second instance, neither in the third. Considering the differences in our processing, this seems as much likeness as could be expected.

As for general distribution of recessions, Gray's profile falls symmetrically according to his four basic subcycles:

3 rise, 1 fall/2 rise, 2 fall/2 rise, 2 fall/
1 rise, 3 fall

By contrast, my profile falls into two parts. The first is 700-800 years long, and consists of 8 consecutive ascents and then 7 consecutive descents. The second or mainly Roman half of the profile runs for 450 years, rises much less high, and consists of 4 rises and 6 falls, somewhat irregularly interspersed except for 4 consecutive terminal declines. The irregularity in the Roman part of the profile seems to be due mainly to Greek resumptions falling in the same period: the strictly Roman contributions by themselves would group more concentratedly into a "normal" curve briefer and lower than the Greek curve.

Different Approach

There is one difference between our two diagrams which is due to basic differences in approach. Gray's periods are of unequal length, their tempo first accelerating and then decelerating markedly. This change of tempo toward and away from the culmination seems significant and probably true. Gray's periods express economic, social, and political conditions. He brings in creative culture mainly in order to validate his cycles and epicycles, through the fact of the course of the creativity fitting these. I do not start in with cycles or set periods, and proceed to examine cultural productivity alone and in terms of convenient equal time units. The two procedures are really quite dissimilar. Hence the intrinsic correspondences of our two diagrams, as compared with their formal differences, are really considerable.

As for Gray's general attack on the problem, it seemed to me at first to be somewhat artificial and elaborate, due especially to its consistent symmetry. However, most of us probably also tend to have some expectation that the diagram portraying the course of a civilization will come out more or less symmetrical. After all, "normal" distribution curves or polygons are symmetrical. Gray has simply carried this assumption farther. If he has carried it too far, and his model is artificially overelaborate, it will break down as it is set against more and more of the phenomena. So far as it continues to fit them without forcing, it will gradually come to be accepted. Quite likely, fit and acceptance will prove to be partial and subject to improvement . . .

I assume throughout that the cycles and epicycles are not to be construed as causal entities in their own right, but as the qualitative and temporal (and spatial) forms in which economic-social-political and creative factors are expressed.

One other point needing comment is Gray's limiting himself—wisely, no doubt—to one civilization, in view of the question inevitably arising as to whether his epicyclic model is applicable to other civilizations—or perhaps better, how far may it be applicable?

It is clear that certain of his fundamental substantive properites, like the agrarian-industrial or city state-superstate polarities, may have to be replaced by different concepts in model-building for other civilizations. Thus, China and Egypt just never had any city-state organization (it has been conjectured for Egypt, but evidence still seems to be lacking). Mesopotamia had city-states and empires, but the latter were singularly transitory . . .

Cycles and epicycles may be determinable in other cultures, but their qualitative content thus promises to be pretty different.

Another consideration on which cycles and epicycles impinge is the contour profile of major civilizations . . .What we see there concentratedly, we tend to look for elsewhere; but it comes complicated elsewhere by recurrences, skewness, open ends, or sudden death by extraneous violence.

All these matters are beyond the scope of Gray's paper, and he did well to leave them out. But so far as his model is significant and useful, there will be temptation to apply it elsewhere, and my warning is that it will probably not transfer outright. On the other hand, such features as may prove to transfer to other cultures without undue modification will thereby be further validated as interpretations of the Graeco-Roman civilization.

THE 9.25-YEAR CYCLE IN THE DOW-JONES INDUSTRIAL AVERAGE

BY JOHN HARVEY*

An inspection of any chart showing the action of the Dow-Jones Industrial Average from 1921 to 1949 will show that major highs occurred in 1929—1937—1946 and major lows occurred in 1921—1932—1942—1949. If these highs and lows are plotted on a yearly chart with all the highs at the same distance above a base line and all the lows at the same distance below a base line, the basic cycle in the movement of the market becomes apparent.

This cycle may then be calculated as follows:

DATES OF HIGHS & LOWS	BULL MARKET	BEAR MARKET
8/24/21 - 9/3/29	8 YR. 9 D.	
9/3/29 - 7/8/32		2 YR. 10 MO. 5 D.
7/8/32 - 3/10/37	4 YR. 8 MO 2 D.	
3/10/37 - 4/28/42		5 YR. 1 MO. 18 D.
4/28/42 - 5/29/46	4 YR. 1 MO. 1 D.	
5/29/46 - 6/13/49		3 YR. 14 D.
TOTAL - ALL 3	16 YR. 9 MO. 12 D.	11 YR. 7 D.
AVERAGE	5 YR. 7 MO.	3 YR. 8 MO.

The average length of one major bull market is 5 years, 7 months.
The average length of one major bear market is 3 years, 8 months.

The average length of one complete cycle is 9 years, 3 months, or 9.25 years.

A bull market uses 60% of the time of one cycle.
A bear market uses 40% of the time of one cycle.

Bear market time is 66% times the previous bull market time.

The time from the top of a bull market to the top of the next bull market averages 9 years, 3 months.

The time from the bottom of a bear market to the bottom of the next bear market averages 9 years, 3 months.

After the length of the cycle was calculated, as shown above, it was necessary to position it on the pattern of the actual stock market at the point of least possible error. This was done by trial and error. The table which follows gives the best possible timing of the ideal cycle pattern, and compares this ideal timing with the actual highs and lows.

COMPARISON OF HIGHS

DATE CYCLE HIGH	DATE ACTUAL HIGH	DAYS CYCLE EARLY	DAYS CYCLE LATE
7/1/28	9/3/29	427	
10/1/37	3/10/37		203
1/1/47	5/29/46		214

COMPARISON OF LOWS

DATE CYCLE LOW	DATE ACTUAL LOW		
3/1/32	7/8/32		
6/1/41	4/28/42	128	
9/1/50	6/12/49	301	434
	IN BALANCE	856	851

The maximum error in cycle timing is 14 months early and 14 months late. The average error is 9 months early or late. This is an error of 8% in 9.25 years.

The calculated timing of the cycle was then projected backward to the year 1900 and forward to

DATE OF PREVIOUS HIGHS		CYCLE DATE OF NEXT HIGH
5/29/46	PLUS 9 YR. 3 MO. (1 CYCLE)	8/29/55
3/10/37	PLUS 18 YR. 6 MO. (2 CYCLES)	9/10/55
9/3/29	PLUS 27 YR. 9 MO. (3 CYCLES)	6/3/57
	CALCULATED AVERAGE HIGH	4/4/56
	ACTUAL HIGH	4/6/56 (521.05)
	CYCLE HIGH DATE ON CHART	4/1/56

The same method used to calculate the next bear market follows:

DATE OF PREVIOUS LOWS		CYCLE DATE OF NEXT LOW
6/13/49	PLUS 9 YR. 3 MO. (1 CYCLE)	9/13/58
4/28/42	PLUS 18 YR. 6 MO. (2 CYCLES)	10/28/60
7/8/32	PLUS 27 YR. 9 MO. (3 CYCLES)	4/8/60
	CALCULATED AVERAGE LOW	12/6/59
	CYCLE LOW DATE ON CHART	12/1/59

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*JOHN HARVEY IS A MEMBER OF THE FOUNDATION WHO HAS KINDLY GIVEN US PERMISSION TO USE THIS ARTICLE AND THE COPYRIGHTED CHART WHICH ACCOMPANIES IT. MR. HARVEY IS A GRADUATE OF THE CARNEGIE INSTITUTE OF TECHNOLOGY AND IS EMPLOYED AS AN ENGINEER BY THE CONSUMERS POWER COMPANY OF JACKSON, MICHIGAN. HE HAS FOLLOWED THE MARKET FOR MANY YEARS, AND SAYS, "THIS STUDY ON CYCLES IS ONE OF THE INTERESTING THINGS I HAVE DISCOVERED AS A FACTOR IN MARKET MOVEMENTS."

the year 2000. All of this work was done in June, 1956, and the chart on the previous two pages was copyrighted July 2, 1956.

Partly because of this study, I called the high of April 16, 1956 at 521.05 the bull market top before it gave a definite signal in October, 1956.

An interesting corroboration of that date is shown at the bottom of the preceding page.

On the year end basis of the Dow-Jones Industrial Average, this study indicates the market should go down during the years 1958 and 1959. The market then should go up during the years 1960, 1961, 1962, 1963, and 1964.

It appears that the stock market may make a major bear market low at about 12/1/59.

One would expect the next bull market should begin about 12/1/59, and continue to about 7/1/65, plus or minus one year.

There is no way under this method of estimating how high or low a market will go. It tells us only that when the high dates approach, one should consider selling common stocks. When the low dates approach, one should consider buying common stocks.

At the moment. therefore, it appears that the low of 420 on Oct. 22, 1957 was not the final low in the current move. That low was too soon (and too high). It will probably be broken to reach a final low about 12/1/59, perhaps at a level of about 250—300 on the Average.

There apparently is also a 27-year cycle in the Dow-Jones Industrial Average with highs in the years 1929—1956—1983. Therefore the highs in 1965 and 1974 should be less than 521 because of the concurrent depressing effect of the low period in the 27-year cycle. The high in 1983-84 should be above 521 because both the 9.25-year cycle and the 27-year cycle are at high levels.

I think that those who purchased stock during the past two years may have to wait a long, long time to break even.

COMMENT ON THE "9"-YEAR CYCLE

The 9-plus-year cycle is manifest in many series. That is, the 9-year wave is often so obvious in even the raw figures that it can be seen and analysed by a straightforward common sense approach such as Mr. Harvey has used.

There are many 9-year cycles on record, and these cycles tend to confirm the 9.25-year wave in the Dow-Jones Industrials.

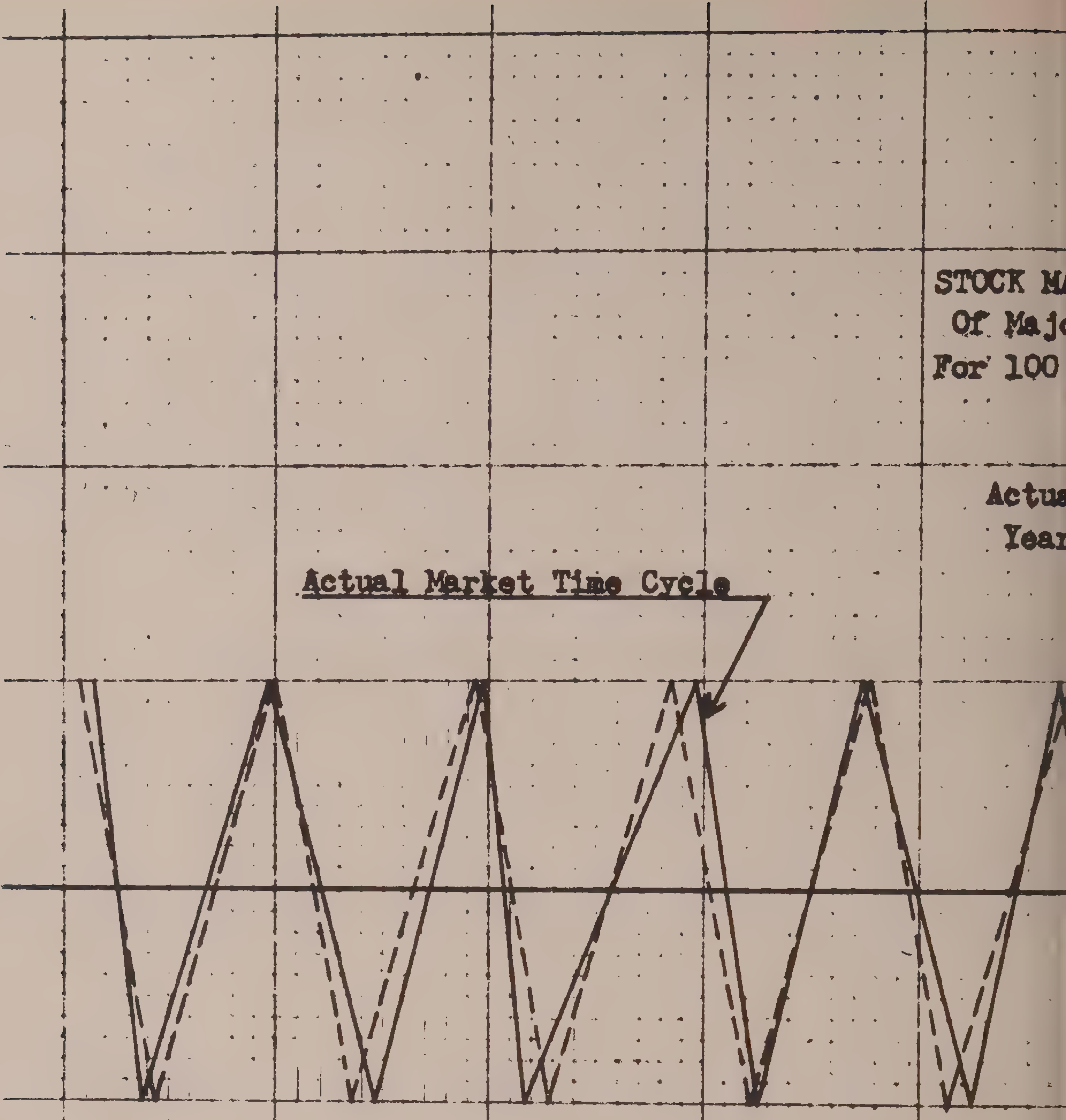
A summary table of some of the other 9-year cycles is given below. As you can see, the timing of the crests in the Dow-Jones series is similar to the timing in the other series.

We do not ordinarily use unequal legs in a wave, but in the case presented above the variation in the method of timing the bottom of the wave certainly fits the facts.

E. R. Dewey

Phenomena	Span of Years	Cycle Length	Time of Current Crest	Strength (% above trend at Crest)
Lynx Abundance (Secondary Cycle), 1735—1950	216	9.0	1948.	26.5
New Members, Presbyterian Church, U.S.A., 1861—1951	126	9.0	1949	u
New Members, Methodist Church, 1849—1950	102	9.0	1949	u
New Members, Episcopal Church, 1849—1950	102	9.0	1949	u
New Members, Congregational Church, 1857—1950	94	9.0	1949	u
Venereal Disease	u	9	u	u
Cattle on Farms, 1867—1954	88	9.0	1953	2.4
Arizona Tree Rings, Flagstaff, FLH	u	9.1	u	u
Sunspots, 1749—1950	202	9.15	1956.0	11.0
S & P Combined Stock Price Index, 1871—1955	*85*	*9.18*	*1955.66*	*17.1*
S & P Industrial Stock Price Index, 1871—1955	*85*	*9.18*	*1955.61*	*19.0*
S & P Railroad Stock Price Index, 1831—1955	*125*	*9.18*	*1955.56*	*17.4*
Arizona Tree Rings, Santa Catalina	u	9.2	u	u
Liabilities of Commercial and Industrial Failures (Inverted), 1857—1953	97	9.2	1954.9	38.0
Pig Iron Prices, 1784—1950	167	9.2	1955.85	12.2
Grasshopper Abundance, 1841—1940	100	9.2	1957.9	139.0
Copper Prices, 1784—1950	167	9.28	1956.0	14.3
Wheat Prices, 1866-7—1951.2	86	9.3	1955.5	11.5
Manufacturing Production, 1863—1953	91	9.3	1955.65	5.9
Sales of a Manufacturing Company, 1871—1940	70	9 1/3	1956.9	17.0

u represents unknown.



Cycle Low	Actual Low	Error	Cycle Hi
6/1/04	11/9/03	- 8 Mo.	10/1/00
9/1/13	7/30/14	+11 "	1/1/10
12/1/22	8/24/21	-15 "	4/1/19
3/1/32	7/ 8/32	+ 4 "	7/1/28
6/1/41	4/28/42	+11 "	10/1/37
9/1/50	6/12/49	-15 "	1/1/47
12/1/59			4/1/56
3/1/69			7/1/65
6/1/78			10/1/74
9/1/87			1/1/84
12/1/96			4/1/93

ME CYCLE
& Lows
1900-2000

John Harvey
119 Ridgeway
Jackson, Michigan

Dated: 6/22/56

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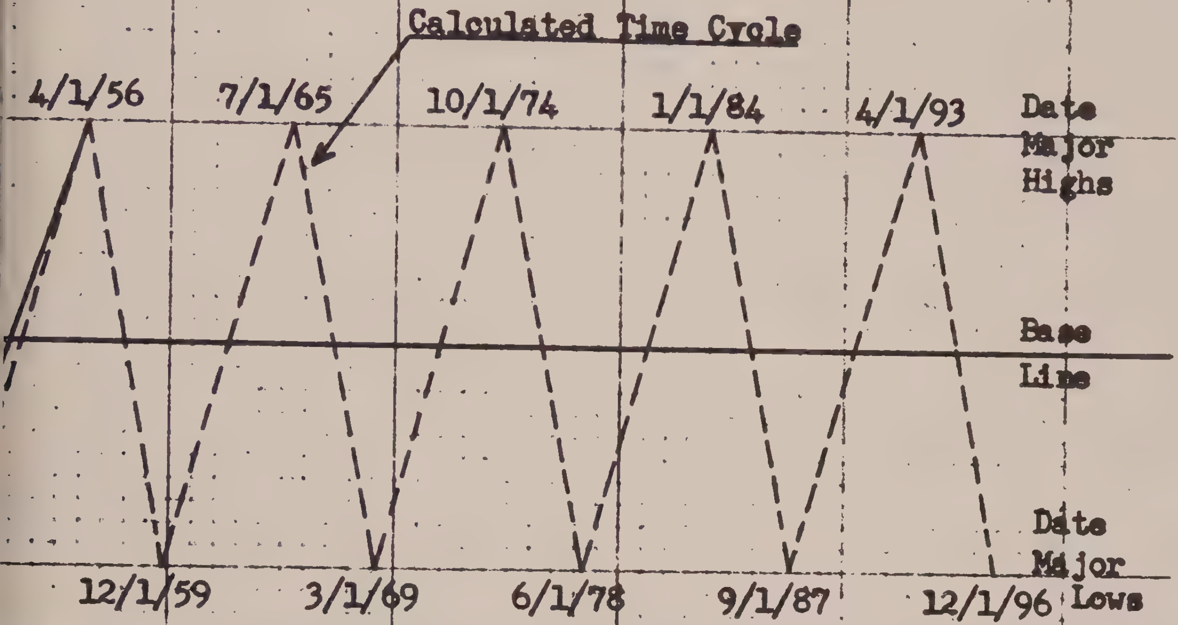
Cycle
-1956



nal High	Error
/17/01	+ 9 Mo.
/19/09	- 2 "
/ 3/19	+ 7 "
/ 3/29	+14 "
/10/37	- 7 "
/29/46	- 7 "

Bull Market Time-60% = 5 Yr.-7 Mo.
Bear Market Time-40% = 3 Yr.-8 Mo.
Total Cycle Time-100%= 9 Yr.-3 Mo.

Consider Selling Stocks Near Cycle High Dates
Consider Buying Stocks Near Cycle Low Dates

Regardless of Price Levels

1960 1970 1980 1990 2000

The Cycle Workshop

HOW TO GET HINTS OF CYCLES—THE GRADUATED SCALE

In previous issues I have given you three simple ways to get hints of cycles. These ways are (1) inspection, (2) "pencils," (3) "thumbing," and (4) "counting." (See *Cycles* for January 1958, pages 31 and 32; and for April 1958, page 96.)

This article will discuss a fifth way—the graduated scale.

The graduated scale is merely a slip of paper with little marks on the edge spaced equally at whatever length you wish, in scale to suit your chart paper.

For example, if other methods suggest a nine-year cycle, you put your marks at what would be nine years apart on your chart paper. You then lay your graduated scale against your chart--first against the highs, then against the lows--to see how well the turning points conform to the perfectly regular intervals of your graduated scale. See Figure 1 below.

You may find, as in Figure 1, that the correspondence is fairly good.

On the other hand you may find that the turning points progressively outrun the nicks on your graduated scale. In this event make a new and slightly longer graduated scale—say a 9.1-year or a 9.2-year scale. Similarly if your turning points run closer you would make and try a shorter scale.

Instead of looking for turning points it is often better to look for *areas* of high (as in Fig. 2 below) and *areas* of low.

It is a good plan to keep a stock of graduated scales on hand so that you can try one after another easily.

When you make a graduated scale, test the total length of the scale as a check. For example, if you mark off nine years on your scale and then another nine years and so on, you may be out as much as two or three years by the time you have made a dozen marks. Therefore check to see if the total space from one end of your graduated scale to the other is 108 (9 x 12) years long (if you have a dozen nicks).

It helps to number the nicks.

A graduated scale will refine and support (or negate) the preliminary findings of the four other methods.

The next installment of this series will tell you how to make and use the Time Chart as a sixth means of getting hints of cycles. It is by far the best of all six methods.

E. R. Dewey

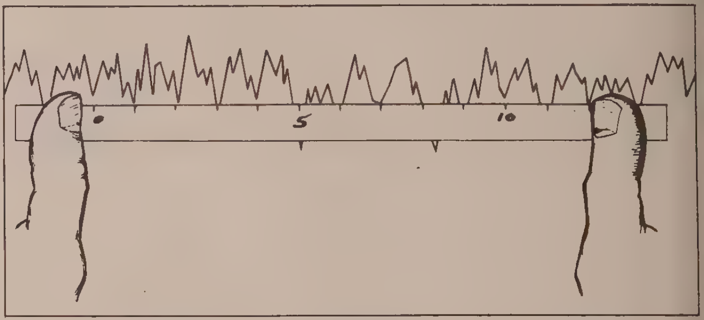


FIG. 2. THIS 20-YEAR SCALE SHOWS AREAS OF HIGH THAT HINT OF POSSIBLE 20-YEAR CYCLE.

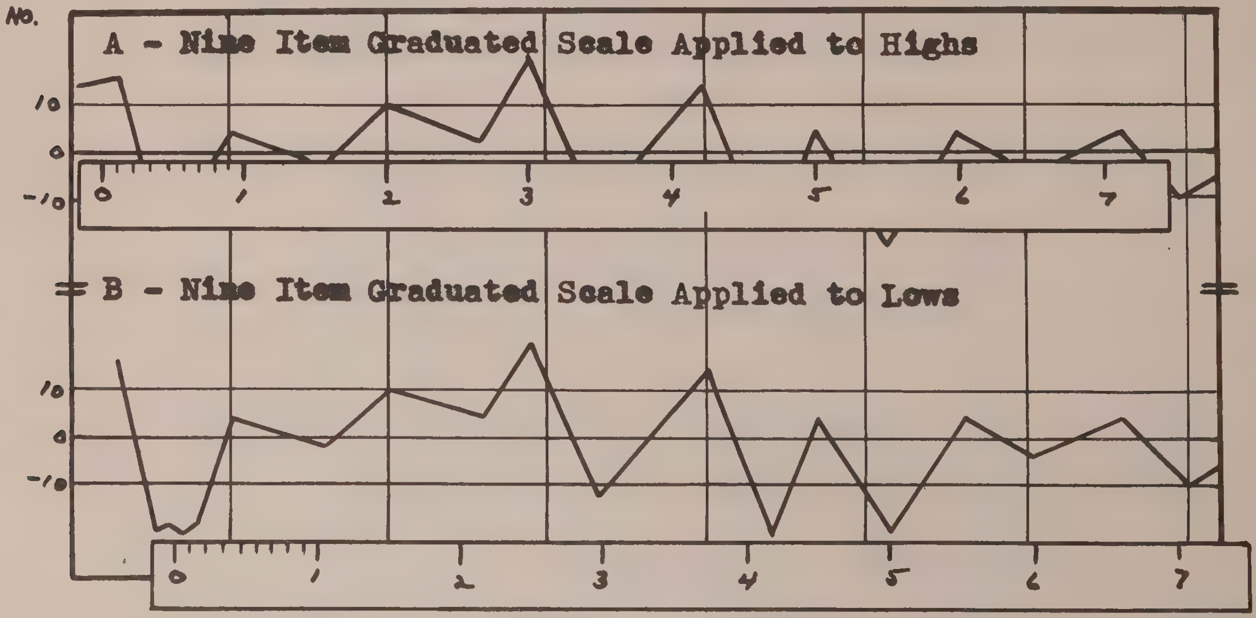


FIG. 1. A GRADUATED SCALE USED TO FIND HINTS OF CYCLE LENGTH.

Letters to the Editor

INFLATION

Dear Mr. Dewey:

You write you are not aware of a cycle in inflation. I have not studied such a cycle, but there certainly must be one because there are brief periods of depression in the long and ever upward trend of the business cycle when money does increase in buying power.

Sincerely yours,
Morris Dickason

255 South Marion
Oak Park, Ill.

My Reply

Dear Mr. Dickason:

The answer to your letter depends upon what we mean by inflation.

Webster's dictionary defines *inflation* as follows: "Disproportionate and relatively sharp and sudden increase in the quantity of money or credit, or both, relative to the amount of exchange business. Such increase may come as a result of unexpected additions to the supply of precious metals as in the period following the Spanish conquests in Central and South America or the period following the opening up of large new gold deposits; or it may come in times of business activity by expansion of credit through the banks; or it may come in times of financial difficulty by governmental issues of paper money without adequate metallic reserve and without provisions for conversion into standard metallic money on demand. In accordance with the law of the quantity theory of money, inflation always produces a rise in the price level. cf. inflationist period."

Inflationist period is defined as follows: U. S. Hist. A time of suspension of specie payments as from 1862 to 1879. Hence, any similar period of inflation, as to a greater or lesser extent in all countries during the World War, and esp. in Germany, Russia, and Austria after the World War."

Because inflation always produces a rise in price level, rises in the price levels are sometimes called inflation, but this is not correct.

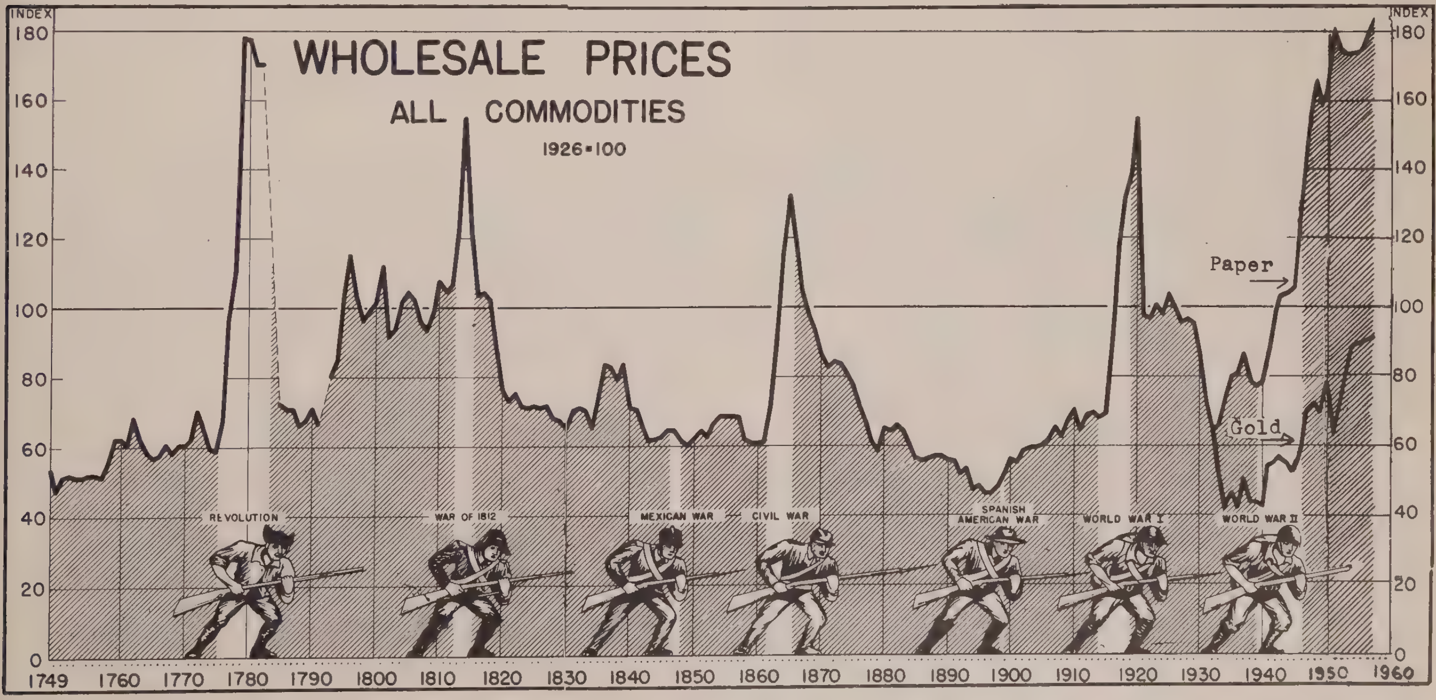
As stated in the definition, we experienced inflation in this country at the time of the Civil War and again when we went off the gold standard in 1933 and entered upon a second paper-money era.

It would be hard if not impossible to know which of the ups and downs of prices of the last 35 years were due to variations in the inflation factor and which were due to normal price fluctuations.

You see, prices fluctuated very considerably even when the dollar was tied to gold. In this connection see the chart below which shows average wholesale prices from 1790 to 1933 with Civil War prices converted to a gold basis.

The same chart shows prices from 1933 to date on both a gold and a currency basis. The difference between the two curves is one way of measuring inflation.

Another curve that is interesting in this connection is also shown below. It records government debt from 1830 to date. If past trends continue the debt will grow and so will interest payments. When interest payments are so great that it is politic-



ly inexpedient to continue them, the debt will presumably be repudiated in one way or another and we will start over again.

You will note that the debt has advanced and declined in a cycle about 59 years long, more or less corresponding to what seems to be a 54-year cycle in wholesale prices.

Does this clear up the situation for you? If not please write again.

Ever cordially yours,

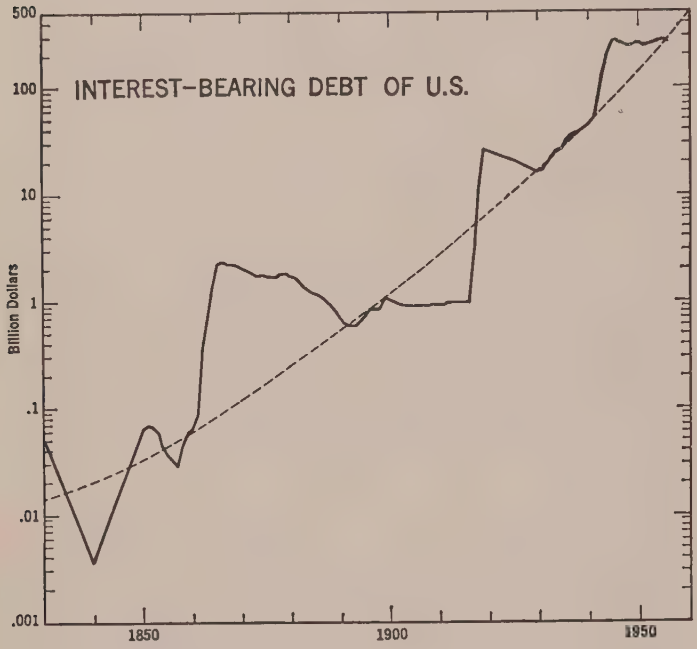


Fig. 4. Interest-Bearing Debt of the United States

SUGGESTIONS

Dear Mr. Dewey:

I notice you seem to be plagued by a group who apparently subscribe to your magazine for no other purpose than to take a quick glance at your combined cycle projections in the stock and commodity markets, then rush to a broker and place an order, quickly reverting to their original activity, perhaps no more challenging than sitting in an easy chair and reading the comics.

As the stock market is now acting in strong opposition to your rough synthesis, I think a large proportion of the above group will soon be eliminated either by lack of interest or of capital. It appears difficult for many to realize your synthesis is actually not a forecast, and that it considers only a few well defined cyclical factors. all of which may be cancelled by other forces, especially in the short run of a year or less.

Personally, I would like to suggest the following modifications in the magazine:

(a) I would like to see a more mathematical approach to cyclical analysis. Rather than a per cent gain per year in describing a stock market cycle, I would prefer a statistical description using correlation coefficients, measures of skewness and kurtosis. Attempts should be made to develop empirical equations which describe a curve. I realize this is difficult to do in many cases; however, I do believe the crude graphical methods of depicting cyclical data will eventually be replaced except where very rough visual inspection is the only requirement.

(b) Further, I would like to see additional cyclical data on human behavior.

(c) Lastly, an occasional article on cyclical analysis techniques would also be of great interest.

Sincerely,
James R. Sheehan

San Mateo, California

CYCLE THEORY

Dear Mr. Dewey:

I am taking the liberty of returning pages 183 and 184 of the August issue of *Cycles* because I think they illustrate a rather disturbing dichotomy.

On Page 184 quite a good deal of material can be summed up in your words: "We are students of rhythmic cycles."

But on the other side of the same page, which of course is page 183, we have a discussion of the psychology of depressions, which, right or wrong, is surely a flagrant example of an old-fashioned editorial.

Very sincerely,
A. P. J. D.

Atlantic City, New Jersey

In Reply

Dear Mr. D.

I am afraid I cannot agree with your letter of July 18th.

We are students of rhythmic cycles. If, as seems to be the case, we human beings are surrounded by a welter of rhythmic forces of various wave lengths the question immediately arises, "How do these environmental forces affect man?"

My own belief—and it is only a belief—is that these forces affect human beings through emotions.

Most people believe that the ups and downs of business occur the other way around; they believe the ups and downs are the result of "business" and that business fluctuations affect the emotions. I disagree.

My concept has many holes in it. For example: Are there really such environmental forces? If so, what is their nature? What causes them? Assuming these forces to exist, why don't they affect all of us in the same way? That is, why should the people who buy and sell aluminum be affected by forces of one wave length, the people who buy and sell copper be affected by forces of other wave lengths?

I don't defend my theory very vigorously, but nothing better has yet been advanced to explain the facts.

I do, however, defend the idea that theories that explain or purport to explain how rhythmic cycles operate are properly part of the study of rhythmic cycles, and that page 183 is therefore part and parcel of our basic activity.

Now that I've explained more fully, don't you agree with me?

Ever cordially yours,

The Cycle Round-up

NOVEMBER 1958

This month's Round-Up presents charts of the following series:

- Stock Prices
- Aluminum Production
- Oats Prices
- War
- Automobile Production

Figures for the other series regularly reported follow:

Bond Yields

These figures are the yields for all domestic corporate bonds as prepared and published by Moody's.

1958 -	Jul	4.02%
	Aug	4.17
	Sep	4.35 est.

Corn Prices

The actual price of No. 3 yellow corn at Chicago in recent months has been:

1958 -	Jul	134.4 cents/bushel
	Aug	134.0
	Sep	127.0 est.

Copper Prices

The price of electrolytic copper bars at New York during recent months has averaged:

1958 -	Jun	24.69 cents/pound
	Jul	25.67
	Aug	26.07

Egg Prices

The wholesale delivered price of eggs, extra, large, at Chicago during recent months has been:

1958 -	Jun	(not comparable)
	Jul	37.3 cents/dozen
	Aug	39.1

Liabilities of Failures

The total liabilities of commercial and industrial failures during recent months has been:

1958 -	Jun	61 million dollars
	Jul	65
	Aug	51

Residential Building Contracts

The value of residential construction contracts awarded in recent months has been:

1958 -	May	1,346 million dollars
	Jun	1,364
	Jul	1,557

Stock Prices

Standard & Poor's Index of Combined Stock Prices in recent months was:

1958 -	Jul	45.98
	Aug	47.70
	Sep	48.30 est.

Sunspots

Recent sunspot numbers were:

1958 -	May	175
	Jun	168
	Jul	198

Unemployment

The percentage of the labor force that was unemployed during recent months was:

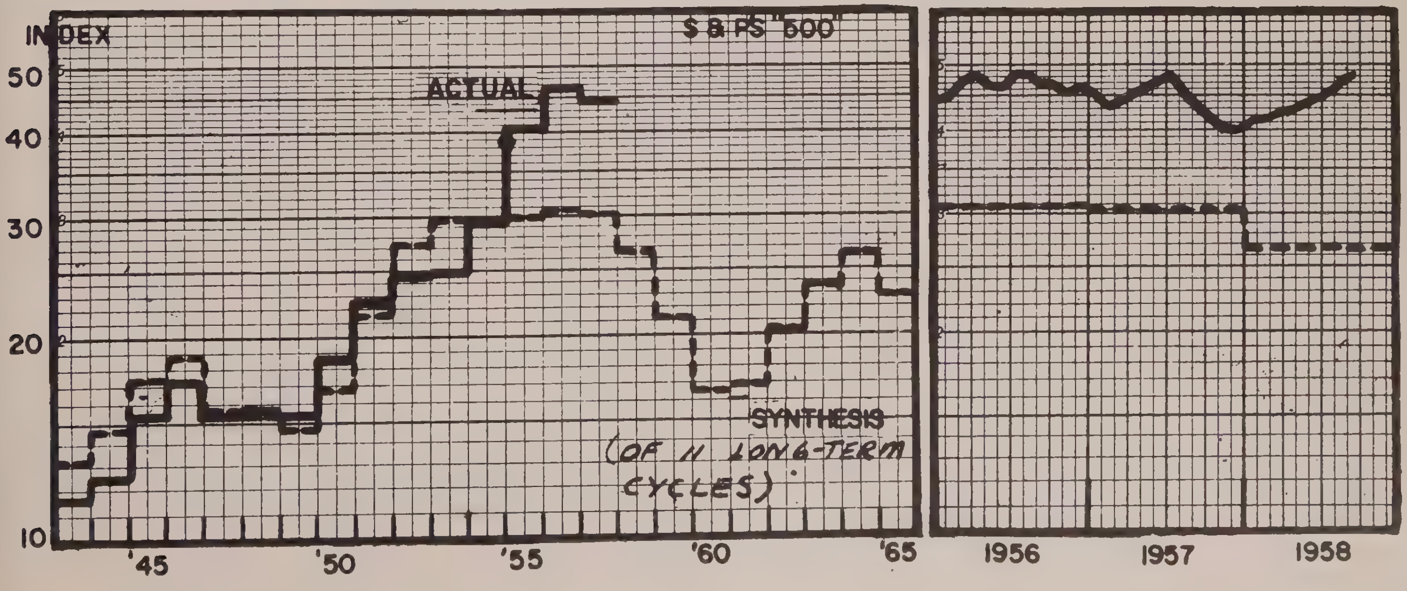
1958 -	Jun	7.72%
	Jul	7.51
	Aug	6.71

Wheat Prices

The price of No. 1 Dark Northern Spring Wheat at Minneapolis during recent months was:

1958 -	Jun	247.3 cents /bushel
	Jul	243.2
	Aug	217.2

STOCK PRICES



ALUMINUM PRODUCTION

Despite the tremendous growth that is the major and most obvious characteristic of the aluminum industry, aluminum production has also shown evidence of a strong 6.4-year cycle.

This conclusion is based on a study covering 72 years of aluminum production. There have been eleven 6.4-year cycles since 1885. Ten of these cycles have been quite pronounced.

The ideal 6.4-year cycle had its most recent high at 1956.3, and is now on the way down to a low due ideally at 1959.5.

The 6.4-year cycle is very strong, going, on the average, from 26% above trend at the time of ideal high to 21% below trend at the time of ideal low.

Thus, over the period of time from the last high at 1956.3 to the next low at 1959.5, the ideal cycle is moving from 26% above trend to 21% below trend.

This is a total drop of 47% in 3.2 years, or about 14% a year. That is, the 6.4-year cycle in aluminum production is currently exerting a downward pressure of 14% of trend a year. This down pressure will continue until the middle of next year.

At the same time as the 6.4-year cycle is going downward, the underlying growth trend of aluminum production continues upward.

The net effect of combining the upward force of the trend to the downward force of the cycle is to reduce the amount of the probable "ideal" decline in the actual production of aluminum.

This is illustrated below by the dashed line on the chart which shows the combined trend and cycle. Of course, the level of trend which is used is a matter of opinion.

As you can see on the chart, the level of trend which we have used tilts the down-leg of the cycle (1956 to 1959) upward. The result is that the 1959 cycle low is about 25,000 tons above the 1953 low.

If the underlying growth trend were horizontal the two ideal lows, 1953 and 1959, would be at the same level on the chart.

The analysis from which we derived the ideal line on the chart was made with annual figures. However, it is possible to follow the current performance of the cycle by using monthly data. Of course, we have to keep in mind that the individual monthly figures will bounce around some.

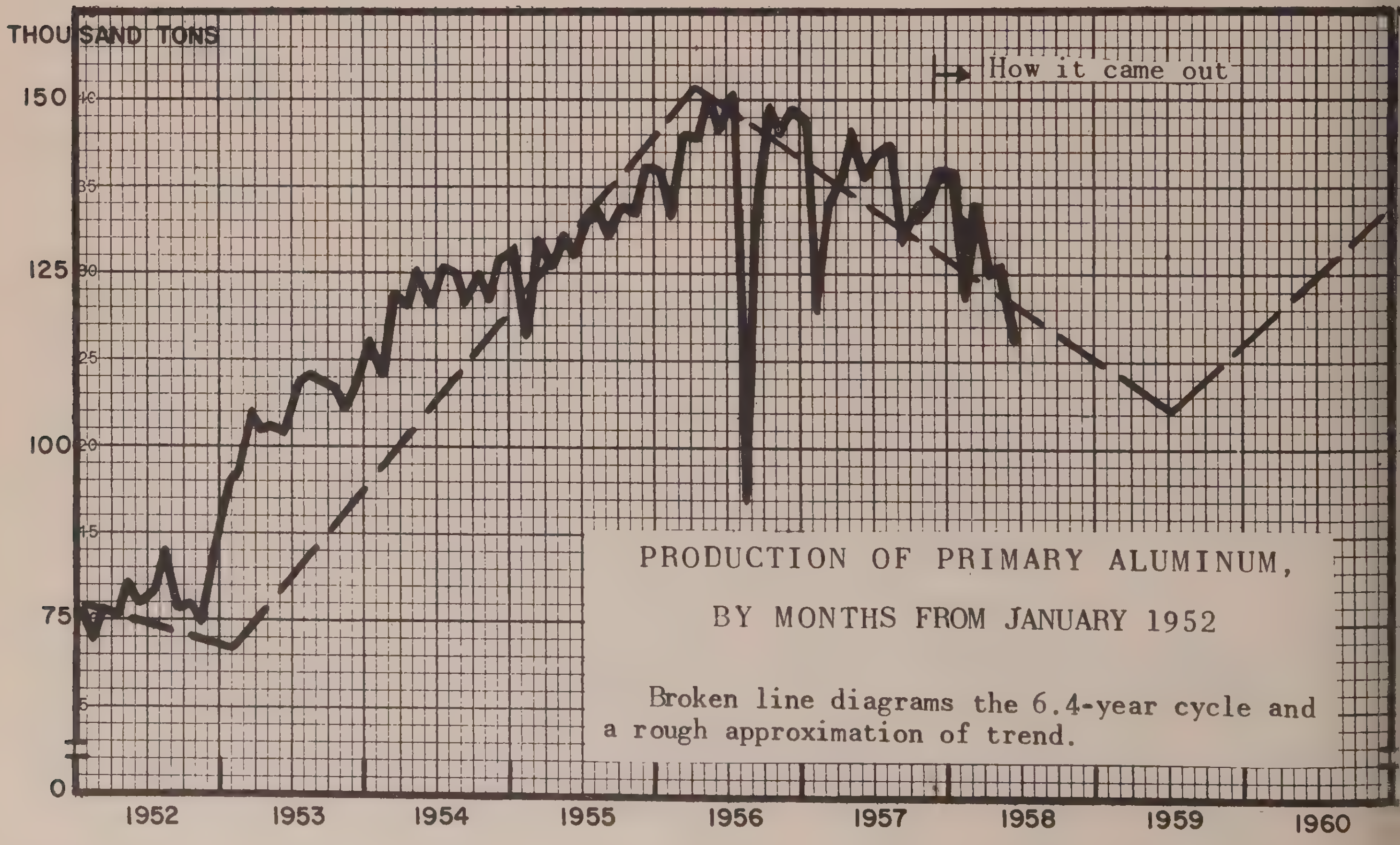
The actual monthly production of primary aluminum is recorded on the chart by means of the solid line.

Recent production of aluminum has been:

1958 -	May	126,327 tons
	Jun	115,325
	Jul	not available

For the complete story of this analysis see the story, "What's Ahead for Aluminum Production?", in the March 1958 issue of *Cycles*.

G. S.



PRODUCTION OF PRIMARY ALUMINUM, BY MONTHS FROM JANUARY 1952

Broken line diagrams the 6.4-year cycle and a rough approximation of trend.

OATS PRICES

Short term movements in the price of oats are strongly influenced by two cycles, the 12-month or seasonal cycle, and the 26.64-month cycle.

The chart below shows the combination of these two cycles (together with an estimate of trend) as a broken line.

The actual price of oats is recorded on the chart as a solid line. The latter portion of the solid line is thickened to emphasize the comparison between the combination of cycles and the actual prices since the two cycles were first isolated.

Because this analysis was based on monthly figures (rather than annual data) the comparison between the two lines is easier to follow as additional actual monthly data are added to the chart.

Three additional actual figures have become available since this chart was first published.

These figures are:

1958 - Jun 64.1 cents per bushel
Jul 66.4
Aug 64.2

These values were the actual average monthly price of No. 3 white oats at Chicago.

Both of the cycles isolated in this series are fairly strong cycles.

The seasonal cycle has a high at January of each year when the price is usually about 6% above the trend.

The seasonal low usually occurs in August when the price averages about 8% below trend.

These figures represent the typical performance of the price of oats over the period 1923-1958. Of course any individual year will vary somewhat from the typical pattern.

The ideal 26.64-month pattern had a low at April 1958 and is now on the way up to a top due ideally at May 1959.

The average amplitude of this cycle has been 7.9% of trend at time of crest.

The broken line on the chart shows the compound effect of the two cycles.

Both of these cycles have prevailed on the average continuously since 1923, and the odds are that they will continue to prevail.

It should be pointed out that of the 13 times since 1923 that the 26.64-month cycle could have operated, it has operated 13 times.

For more detail about these cycles in the price of oats see the complete story, "What's Ahead for Oats Prices?", in the September issue of *Cycles*.

G. S.

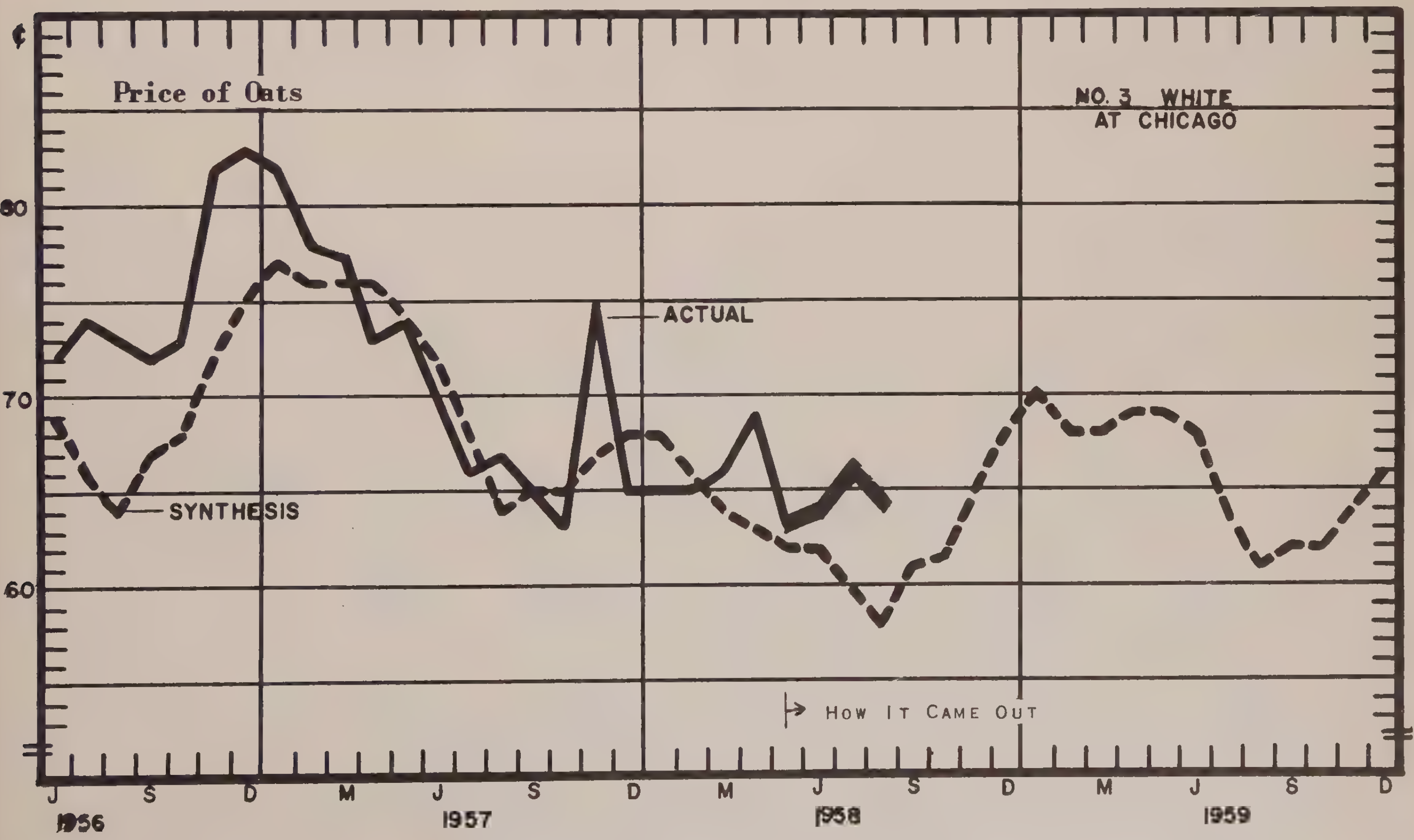


Fig. 1 The Price of Oats. Actual Prices vs the Combination of Cycles and Trend.

WAR

For the benefit of our new members we are reprinting the summary chart from the article "What's Ahead for War?" which appeared in the February, 1958 issue of *Cycles*.

The International Battle Index - the Index of War - is going up.

This is illustrated on the chart below where the broken line diagrams the ebb and flow of the combination of four cycles which have been isolated in the War Index.

The solid line is the record of actual international conflict.

The correspondence between the two lines is the basis for our conclusion that the basic problem with which we have to cope over the next decade is war.

This conclusion is qualified by one if - if the cycles in the index continue to operate as they have for so many years in the past: for 2,556 years, to be exact.

The data we used in this work was developed and extended over this long period of time by Professor Raymond K. Wheeler of the University of Kansas. He and a staff of workers searched all available historical records. To every mild battle he gave a value of one; to every average battle he gave a value of two; to every especially heavy battle he gave a value of three. The index value for any given year is the sum of these values for that year.

The Index of International Battles goes back year-by-year to 599 B.C. The cycles which we isolated in the series are summarized in the following table which gives the length, strength, and timing:

Length: in Years	Strength: Per Cent Above Trend	Timing: Date of High
11 1/5	52	1960
22 1/7*	157	1963
57	151	1975
142	78	1950

The 11-year cycle has been traced back to A.D. 1750. The 22-year cycle is present on the average in each part of the data all the way back. There is no question in regard to the significance of these two cycles in these figures. Cycles of 57 and 142 years in length have also been found, but of course there are not as many repetitions of these.

The four cycles are combined to make one line, the synthesis line on the chart.

As you can see, the curve showing the combination of cycles rises rapidly to a plateau of high intensity during the early 1960's. Very dangerous times lie *immediately* ahead.

The Index values as prepared by Professor Wheeler for recent years are:

Year	Index	Year	Index
1944	150	1951	12
1945	150	1952	0
1946	1	1953	2
1947	0	1954	2
1948	0	1955	3
1949	0	1956	12
1950	15	1957	5

For the complete article giving the details of the analysis of the Index of International Battles see the February 1958 issue of *Cycles*.

E. R. D.

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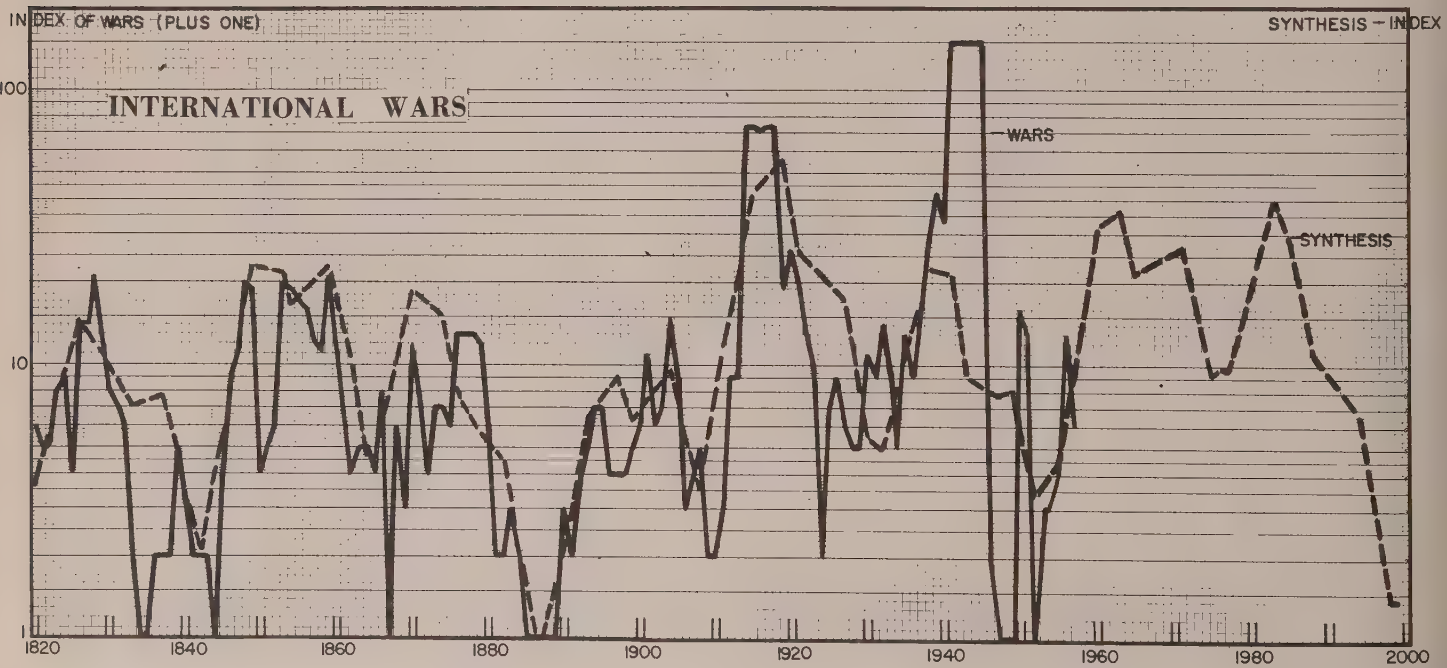
*OVER THE ENTIRE PERIOD, 599 B.C. TO DATE, THE LENGTH IS 21.95 YEARS.



AUTOMOBILES

We have isolated four cycles in the factory sales of automobiles. When combined with an underlying trend these cycles do not suggest any drastic change in the average yearly level of sales from 1957 to 1958.

The combined cycles also do not suggest any great change in the average yearly level of automobile factory sales from 1958 to 1959.

In addition to the four cycles that we know about in this series there are undoubtedly others we have yet to isolate, and which could modify our conclusion. However, we have included here the most obvious cycles present in the series.

There are also non-cyclic random factors which affect the level of sales.

It is the job of the industry specialist to assess this type of fact, and to reach an opinion of the probable level of actual factory sales by combining all the facts—including the facts about the cycles that are reviewed here.

Any conclusion based on the knowledge of these cycles alone must be recognized as a partial and incomplete conclusion, however accurate the information about the cycles may be.

Conversely, any conclusion about the probable amount of automobile factory sales which ignores the fact of these cycles is also only a partial conclusion.

The cycles that are used in the combination are:

Length	Strength	Recent Tops
2.72 (YEARS)	6.2%	1956.08
3.00	7.6%	1955.875
3.41	7.2%	1954.2
6.33	23.0%	1955.28

The strength is the per cent above the trend at the time of the top of the cycle.

The chart below shows, on the left-hand side, the combined cycles and trend compared to the actual level of factory sales by years, beginning with 1951.

The chart also shows the combined cycles only, without the trend added.

The trend we have used is a smoothing of the data after the four cycles are removed from them. Trend is largely a matter of an educated opinion, and for that reason we show the combined cycles alone at the bottom of the chart.

The right-hand part of the chart repeats the combined cycles and trend line for part of the current period, and compares the combination with the current monthly figures. The monthly factory sales figures are multiplied by 12 to put them on an annual basis.

The work on this series was done with annual figures and this fact must be kept in mind when one is looking at the monthly chart. The monthly figures will fluctuate above and below the actual average yearly line that gradually develops as the year progresses.

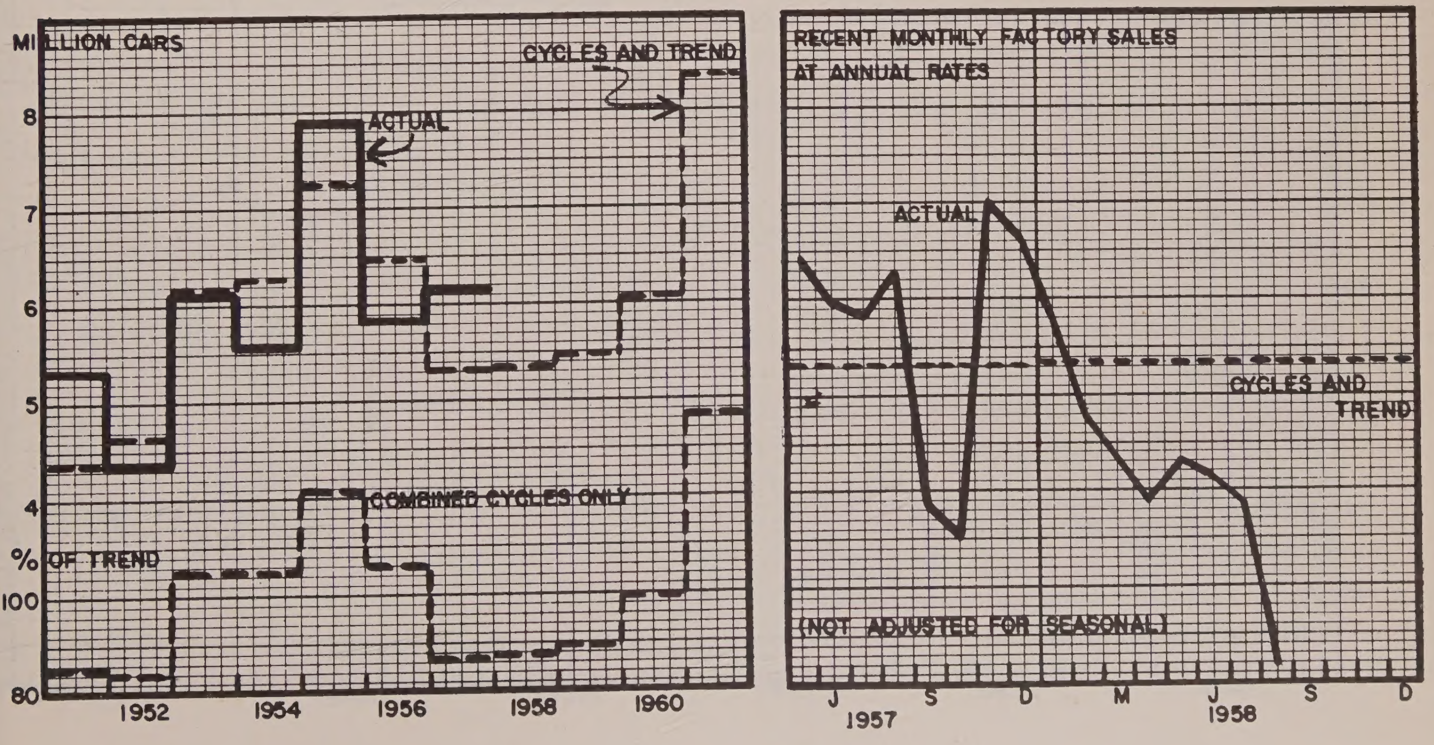
Recent monthly factory sales of automobiles have been:

1958 -	Jun	342 thousand cars
	Jul	321
	Aug	180

August and July are preliminary estimates of production.

For more detail see "What's Ahead for the Sales of Automobiles", by E. R. Dewey, in the January, 1958 issue of *Cycles*.

G. S.



The Geisinger Indicator

BACKGROUND

The Modified Geisinger Indicator is a series of numbers which, in the past, have gone up and down ahead of corresponding movements of the Federal Reserve Board Index of Industrial Production. The Modified Geisinger Indicator thus throws some light on the probabilities of the future.

The F. R. B. Index of Industrial Production measures physical production in the U. S. A. It is a weighted average of tons, yards, gallons, and numbers of things produced each month.

The Modified Geisinger Indicator is the sum of two Indicators, the Geisinger Indicator and a First Difference Indicator.

The Geisinger Indicator was invented by Robert Geisinger. It is derived from figures which are published each month in the *Survey of Current Business*. It is recorded for you in Column 2 of the table which summarizes the forecast.

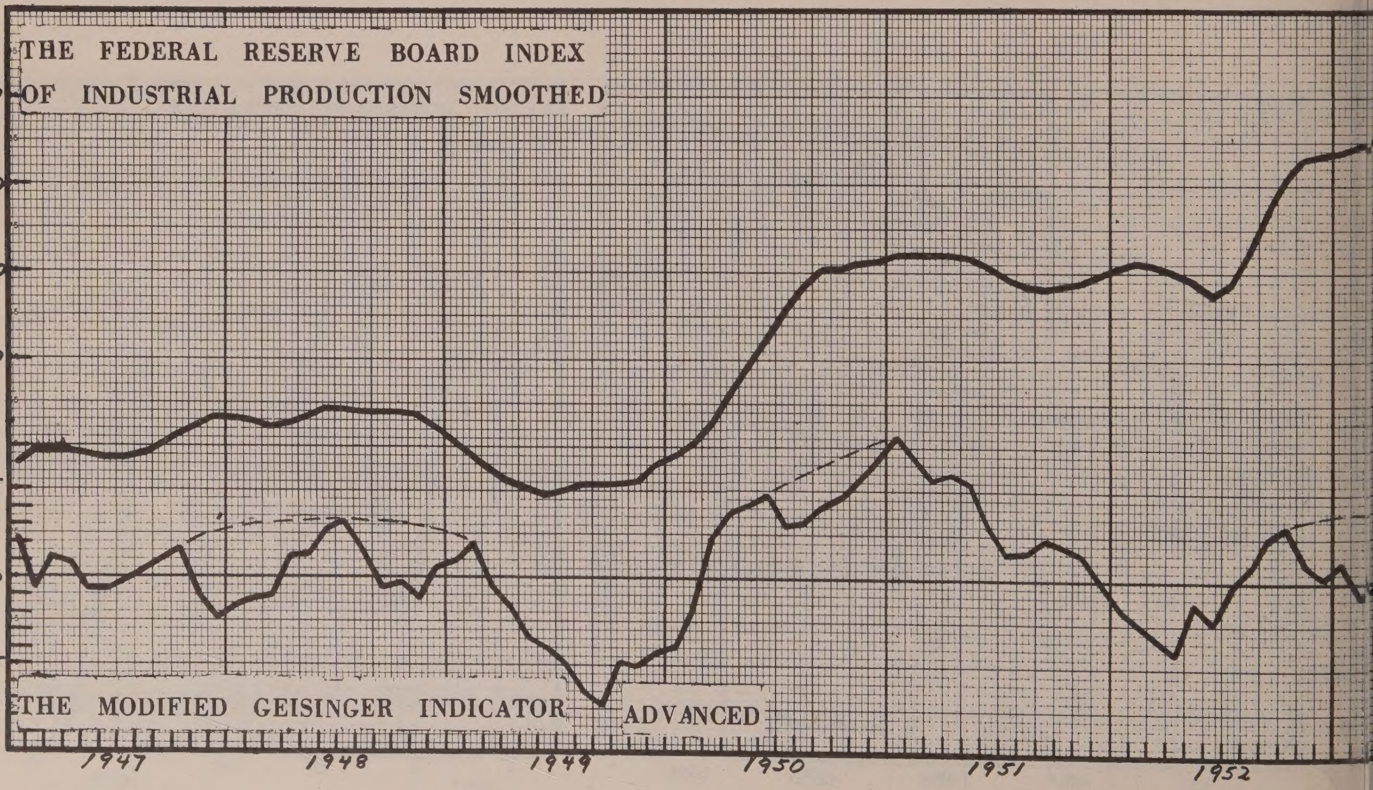
Column 3 of the summary table gives the First Difference Indicator, which is merely the amount by which the smoothed F. R. B. Index is above or below the value for the preceding month. The smoothing is effected by means of a centered 3-month moving average posted to the second position.

Column 4 is the sum of the values in Columns 2 and 3. This value is called the Modified Geisinger Indicator. It suggests in a general way what the F. R. B. Index may do some eight months later.

The smoothed values of the F. R. B. Index of Industrial Production are diagrammed below as the top line on the chart. The latest actual monthly Index of Production is recorded by a dot.

The bottom line on the chart gives the Modified Geisinger Indicator (Column 4 of the table), advancing it by eight months. This advance is for two reasons: (1) so that you can more easily compare the past behavior of the Modified Geisinger Indicator with the behavior of the F. R. B. Index, and (2) so that you can have a better idea of what the F. R. B. Index may do in the future.

The correspondence between the two lines on the chart is general rather than specific. It is not to be expected that every little wiggle in the Modified Geisinger Indicator is significant. It is rather the broad sweep of the line which is to be watched. The dashed lines which are added show the manner in which the eye should follow the Indicator.



FORECAST

The Geisinger Indicator for May (January 1959 when advanced) reached +3.00. This level gives business the green light! *(No bearing on stocks.)*

In the past, when a rising Geisinger Indicator reached +2.00 or more, it has signalled a definite advance in Industrial Production.

For example, the Indicator (going up) has reached or cut the +2 line only four times since Jan. 1947. The first time it heralded the advance from 1947 to 1948. The second time it heralded the advance from 1949 to 1951. The third time it heralded the advance from 1952 to 1953. The fourth time it heralded the advance from 1954 to 1956.

However, because of the nature of its construction, the Indicator does not give even a hint about the possible *level* that Industrial Production will reach. For example, it does not say that the 1956 level of production will be exceeded.

The +3.00 signal does say that the current upturn in business should continue.

The Federal Reserve Board Index of Industrial Production rose to 137 in August. This is the fourth month of advance since the April low.

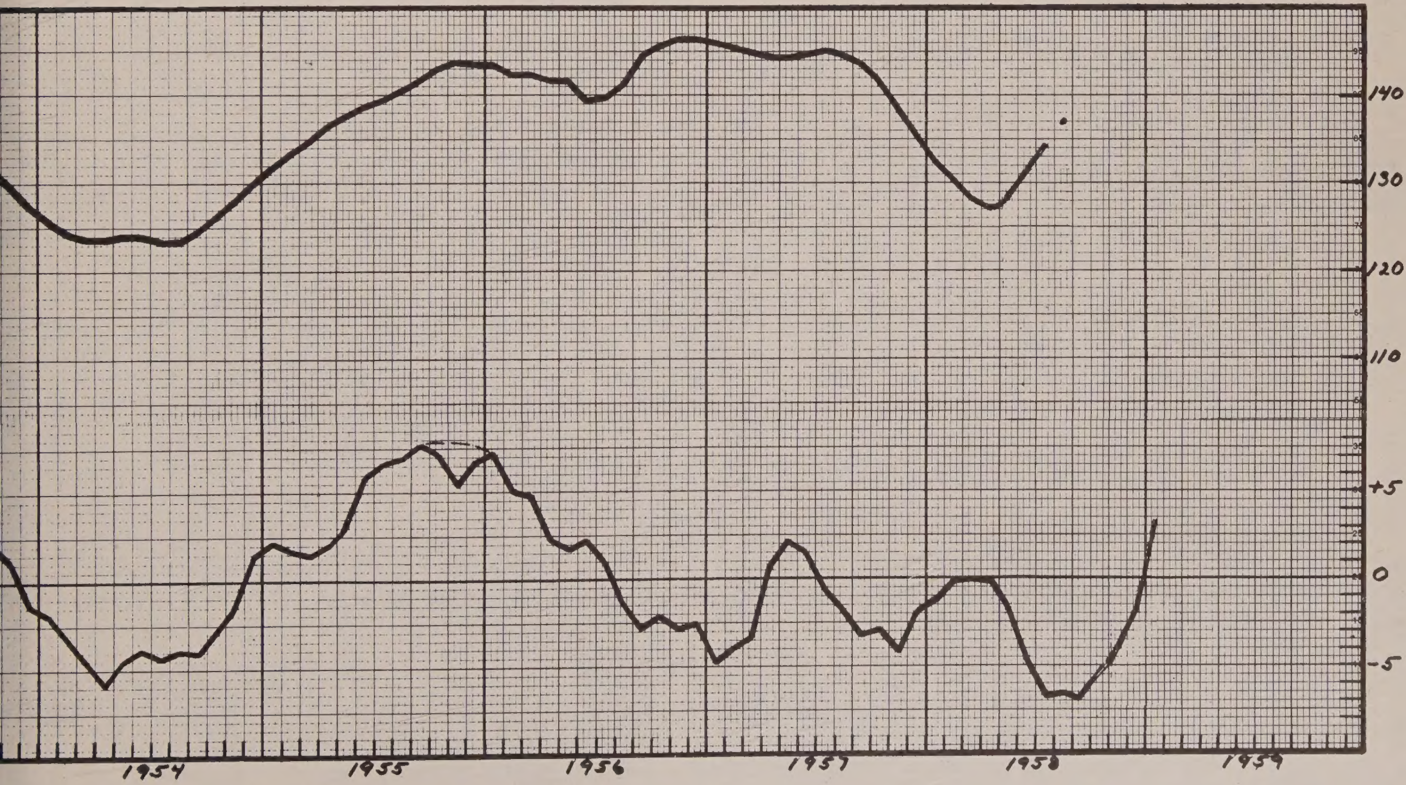
The First Difference Indicator also continued to increase. And, of course, the Modified Indicator was also dramatically up.

In summary: If the Geisinger Indicator continues to herald the changes in the Industrial Production curve as it has in the past, a further increase in Industrial Production is to be expected. We have the green light. Let's make the best of it while it lasts!

September 24, 1958 *E. R. Dewey*

Month	1 F.R.B. Index	2 Geisinger Indicator	3 First Difference Indicator	4 Modified Geisinger Indicator	Timing Advanced 8 Months
Dec.	135	-3.6	-3.00	-6.60	Aug. 1958
Jan. 1958	133	-3.8	-3.00	-6.8	Sept. 1958
Feb.	130	-2.6	-2.66	-5.26	Oct. 1958
Mar.	128	-1.0	-2.33	-3.33	Nov. 1958
Apr.	126	-0.4	-1.50	-1.90	Dec. 1958
May	128	+3.0	+0.33r	+3.33	Jan. 1959
June	132r	*	+2.00r	*	Feb. 1959
July	134r	*	+2.83p	*	Mar. 1959
Aug.	137p		*		Apr. 1959

p - preliminary * - not yet available r - revised



Mr. H. A. Musham
741 No. Rush St.
Chicago, Ill.

LEARN HOW TO APPLY OUR FINDINGS TO THE STOCKS, SALES FIGURES, OR OTHER THINGS IN WHICH YOU ARE INTERESTED

Edward R. Dewey, our Director, has written 23 lessons telling *How to Make a Cycle Analysis*. These lessons give you the essence of what Mr. Dewey has learned in this field in 20 years of study and work.

These lessons are the ones used in the correspondence course we gave in 1955 and 1956. (The correspondence course as such is no longer being given.)

The lessons start at the beginning and assume that you are a high school graduate with no knowledge of mathematics beyond arithmetic.

Four lessons are devoted to a study of the elementary statistics needed as a prerequisite for cycle study. These lessons are supplemented by parts of a college text book of statistics, also provided.

Nineteen lessons are devoted to the techniques of cycle analysis as such. Most of this material is unavailable from any other source.

The lessons are supplemented by additional comment and material which grew out of questions and mistakes of correspondence course students.

Problems are provided for the student to work, but *no papers will be corrected*. We are *not* offering a correspondence course.

The lessons are mimeographed on 8½ x 11 paper, punched for 3-hole binder. Printed charts are provided. Other printed material is included. There are over 600 pages in all, plus the text book on statistics referred to above.

The price for all the material and the text book is fifty dollars, cash with order.

Free examination for 10 days permitted. If not entirely satisfied you may return within that time for full refund.

Send in your check today and a set of the lessons will be prepared for you.

FOUNDATION FOR THE STUDY OF CYCLES

East Brady, Pennsylvania